

TRIENNIAL SUMMARY REPORT, 2012

FOR THE BUSINESS COMMUNITY OUTREACH AND INCENTIVES DIVISION
OF THE LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY



FISCAL YEARS 2010 – 2012 (July 2009 through June 2012)



TABLE OF CONTENTS

ACKNOWLEDGEMENTS	4
BACKGROUND	5
SUMMARY OF FINDINGS	6
INTRODUCTION	6
AQUIFER SUMMATIONS	7
STATEWIDE SUMMARY OF FINDINGS	10
COMBINED AQUIFER DATA AND HISTORICAL COMPARISON	10
FEDERAL PRIMARY MCL EXCEEDANCES	10
QUALITY RANKINGS	10
SUMMARY STATEMENT	11
TABLES AND FIGURES	11
Table 1 – Select Statewide Values	11
Table 2 – Hydrogeologic Column of Aquifers.....	12
Table 3 - Aquifers and Aquifer Systems Monitored	13
Table 4 – Aquifers and Number of Wells Sampled by Month.....	14
Figure 1 – Number of Wells Sampled by Aquifer	15
Figure 2 – Aquifer Areal Extent.....	16
Figure 3 – Well Depth Statistics.....	17
Table 5 – Field, Water Quality, & Nutrients Data Summary by Aquifer/Aquifer System	18
Table 6 – Inorganic (Total Metals) Data Summary by Aquifer/Aquifer System.....	20
Table 7 – Data Summary of All Aquifers/Aquifer Systems.....	22
Figure 4 – Average pH Values	23
Figure 5 – Average Chloride Values	23
Figure 6 – Average TDS Values	24
Figure 7 – Average Hardness Values	24
Figure 8 – Average Iron Values	25
Figure 9 – Average Nitrite-Nitrate Values	25
TWELVE YEAR TREND OF SELECT PARAMETER AVERAGES (2000 – 2012)	26
FIELD PARAMETERS	26
CONVENTIONAL PARAMETERS	27
INORGANIC (TOTAL METALS) PARAMETERS	30
Table 8 – Parameter List	31
Table 9 – Wells Sampled.....	36
REFERENCES	42

APPENDICES

<u>APPENDIX 1</u>	<u>SPARTA AQUIFER SUMMARY</u>
<u>APPENDIX 2</u>	<u>CARRIZO-WILCOX AQUIFER SUMMARY</u>
<u>APPENDIX 3</u>	<u>RED RIVER ALLUVIAL AQUIFER SUMMARY</u>
<u>APPENDIX 4</u>	<u>EVANGELINE AQUIFER SUMMARY</u>
<u>APPENDIX 5</u>	<u>CATAHOULA AQUIFER SUMMARY</u>
<u>APPENDIX 6</u>	<u>NORTH LOUISIANA TERRACE AQUIFER SUMMARY</u>
<u>APPENDIX 7</u>	<u>CARNAHAN BAYOU AQUIFER SUMMARY</u>
<u>APPENDIX 8</u>	<u>MISSISSIPPI RIVER ALLUVIAL AQUIFER SUMMARY</u>
<u>APPENDIX 9</u>	<u>COCKFIELD AQUIFER SUMMARY</u>
<u>APPENDIX 10</u>	<u>CHICOT AQUIFER SUMMARY</u>
<u>APPENDIX 11</u>	<u>WILLIAMSON CREEK AQUIFER SUMMARY</u>
<u>APPENDIX 12</u>	<u>CHICOT EQUIVALENT AQUIFER SYSTEM SUMMARY</u>
<u>APPENDIX 13</u>	<u>EVANGELINE EQUIVALENT AQUIFER SYSTEM SUMMARY</u>
<u>APPENDIX 14</u>	<u>JASPER EQUIVALENT AQUIFER SYSTEM SUMMARY</u>

ACKNOWLEDGEMENTS

The Business Community Outreach and Incentives Division's (BCOID) Aquifer Sampling and Assessment (ASSET) Program owes its success to many people and agencies for their continual support through the years. Without this support, the ASSET Program could not exist.

The water well owners, who voluntarily participate in ASSET, are owed a debt of gratitude. Without access to private, corporate, and public property and wellheads, this program could not operate.

The Louisiana Department of Natural Resources (LDNR) Ground Water Resources Program makes the Water Well Registration data set available to LDEQ, and ultimately to the BCOID, which is used for multiple purposes in the execution of ASSET.

The United States Geological Survey (USGS) Water Resources Division frequently provides well schedule data that are used during the execution of ASSET. These data are made available to the Program through a USGS-LDOTD cooperative program. In addition, the USGS allows its observation wells to be sampled.

Gratitude is also owed to the staff at EPA Region 6, Water Quality Protection Division, Assistance Programs Branch and the Source Water Protection Branch, for their assistance and support for ASSET.

This Program is funded in part by the U.S. Environmental Protection Agency through the Clean Water Act.

BACKGROUND

The Aquifer Sampling and Assessment Program, or ASSET, is conducted as a Clean Water Act activity. ASSET was designed to determine and monitor the quality of groundwater in the major freshwater aquifers across Louisiana. The data derived from this process is provided to LDEQ to aid in groundwater protection through nonpoint source pollution prevention, source water protection and remediation strategies for the State. It is also available to the public through LDEQ's website, email, and through the mail upon request. Also, each well owner receives a copy of the laboratory analytical results from the sampling of their well.

For this reporting period, the ASSET Program monitored 191 wells in fourteen major freshwater aquifers throughout the state. Table 2 illustrates their stratigraphic occurrence while Table 3 lists these major aquifers. The number of wells assigned to each aquifer is based on its areal extent. Currently, the well density goal is approximately one well per 400 square miles. For example, an aquifer with an areal extent of 4,800 square miles would require a minimum of 12 wells to be assigned to it, $4,800/400 = 12$. An effort is made to distribute sample locations (wells) evenly within the areal extent of each aquifer so that a representative sampling of the aquifer can be accomplished. Table 3 lists the square miles of each aquifer, the number of wells currently assigned to it and the well density for each aquifer. Figures 1 - 3 more readily illustrates this by graphing the data found in Table 3. Also, the last row of Table 3 lists the total areal extent of all monitored aquifers, total number of wells sampled and the overall well density for the Program.

The sampling process was designed so that each well is monitored every three years. Following this design allows for all fourteen aquifers to be monitored within the three-year period. The process is then repeated once a three-year cycle has been completed. Typically, five or more wells, each producing from the same aquifer, are sampled each time sampling is performed. An effort is made to sample all assigned wells of the aquifer in question within a consecutive set of sampling events before moving to the next aquifer. Aquifers of small areal extent may have been completed in a single event, whereas larger aquifers may have required several events to complete. Table 4 lists the sample schedule by aquifer along with the month and number of wells sampled.

Each well is sampled for water quality parameters, inorganics (total metals), nutrients, volatile organic compounds, semi-volatile organic compounds, pesticides, and PCBs; and field parameters (temperature, pH, specific conductance, total dissolved solids, and salinity) are measured and recorded at each well. Table 8 lists these field and laboratory parameters along with their reporting units. For specific lists of analytes, methods, and detection limits, please refer to the aquifer summaries appended to this document.

SUMMARY OF FINDINGS

INTRODUCTION

This report summarizes ASSET sampling that occurred from July 2009 through June 2012. One hundred ninety-one wells completed in fourteen different aquifers were monitored. Table 9 contains a listing of all the wells sampled, each well's owner, completed depth, use made of produced water, and the aquifers they produce from. In order to preserve privacy, "Private Owner" is listed for the well owner when a well is owned by a private citizen.

Table 5 lists the minimum, average and maximum sample results for the samples collected from each aquifer for field and conventional parameters. Table 6 lists the minimum, average and maximum sample results for the samples collected from each aquifer for inorganic parameters.

A brief summation of each aquifer's sample results and conclusions begins on the next page. Each summation includes the findings for hardness based on the scale below, and a statement on the general water quality of the aquifer based on the data derived from the wells sampled. The number of federal primary Maximum Contaminant Levels (MCLs), if any, and the number of secondary MCL's (SMCLs) that were exceeded are noted also.

For a detailed discussion of each aquifer's findings, see the aquifer summaries appended to this document. Each summary consists of a discussion of the aquifer's geology and hydrogeology, and an interpretation of the laboratory analyses. The lab analysis interpretation is accomplished by evaluating the general water quality and by comparing the historical data averages with the current data averages to detect changes in water quality over time. Initial water quality is evaluated by comparing individual parameters to their respective MCLs to assess the aquifer's use as a drinking water source, and is rated as good (no MCL exceedances), fair (no MCL exceedances in a drinking water well) or poor (one or more MCL exceedance in a drinking water well). Additionally a second water quality evaluation is made by taking into account whether or not Action Levels were exceeded, whether or not volatile organic compounds, semi-volatile organic compounds, pesticides or PCBs were detected, the number of SMCLs exceeded in relation to the number of wells sampled, and the average hardness value. This rating uses values of good, fair and poor.

It should be noted that all statements about hardness (as CaCO₃) in the aquifer sections and summary section are based on the following scale¹:

Soft	< 50 milligrams per Liter (mg/L)
Moderately hard	50-150 mg/L
Hard	151-300 mg/L
Very hard	> 300 mg/L

A statewide summary of findings and summary statement can be found in the section following the Aquifer Summations section.

¹ Classification based on hardness scale from: Peavy, H. S. et al. *Environmental Engineering*. New York: McGraw-Hill, 1985.

AQUIFER SUMMATIONS

Sparta Aquifer

Fourteen wells ranging in depth from 153 feet to 773 feet, with an average depth of 523 feet were sampled for this aquifer. Laboratory and field data show that of these 14 wells sampled during this reporting period for the Sparta aquifer, no primary MCL was exceeded, while 25 secondary standards were exceeded. The data also show that the groundwater produced from this aquifer is soft, and is of good quality when considering short-term or long-term health risk guidelines. Water produced from this aquifer is of fair quality when considering taste, odor, or appearance guidelines.

Carrizo-Wilcox Aquifer

Twelve wells ranging in depth from 105 feet to 410 feet, with an average depth of 258 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Carrizo-Wilcox aquifer exceeded a primary MCL, with 18 exceedances of secondary standards. The data show that the groundwater produced from this aquifer is generally soft, and is of good quality when considering short-term or long-term health risk guidelines. Water produced from this aquifer is also of good quality when considering taste, odor, or appearance guidelines.

Red River Alluvial Aquifer

Five wells ranging in depth from 58 feet to 89 feet, with an average depth of 73 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Red River Alluvial aquifer exceeded a primary MCL, while nine secondary standards were exceeded. The data also show that the groundwater produced from this aquifer is very hard and is of poor quality when considering taste, odor, or appearance guidelines, but is of good quality when considering short-term or long-term health risk guidelines.

Evangeline Aquifer

Twelve wells ranging in depth from 170 feet to 1,715 feet, with an average depth of 635 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Evangeline aquifer exceeded a primary MCL, while there were six exceedances of secondary standards. The data show that the groundwater produced from this aquifer is generally soft, and is of good quality when considering short-term or long-term health risk guidelines. Water produced from this aquifer is also of good quality when considering taste, odor, or appearance guidelines.

Catahoula Aquifer

Five wells ranging in depth from 352 feet to 910 feet, with an average depth of 678 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Catahoula aquifer exceeded a primary MCL, and only one secondary standard was exceeded. The data show that the groundwater produced from this aquifer is soft, and is of good quality when considering short or long-term health risk guidelines. Also, the water produced from this aquifer is of good quality when considering taste, odor, or appearance guidelines.

North Louisiana Terrace Aquifer

Eleven wells ranging in depth from 49 feet to 158 feet, with an average depth of 107 feet were sampled for this aquifer. Laboratory and field data show that the groundwater produced from this aquifer is moderately hard and is of fair to good quality when considering taste, odor, or appearance guidelines, with 15 secondary standards exceeded. It is also of good quality when considering short-term or long-term health risk guidelines in that no well sampled for this time period exceeded a primary MCL.

Carnahan Bayou Aquifer

Ten wells ranging in depth from 66 feet to 2,036 feet, with an average depth of 801 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Carnahan Bayou aquifer exceeded a primary MCL, and only five secondary standards were exceeded. The data show that the groundwater produced from this aquifer is soft except for the extreme eastern portion of the aquifer that is moderately hard. Data also show that it is of good quality when considering short or long-term health risk guidelines, and is of good quality when considering taste, odor, or appearance guidelines.

Mississippi River Alluvial Aquifer

Twenty-three wells ranging in depth from 30 feet to 352 feet, with an average depth of 129 feet were sampled for this aquifer. Laboratory and field data show that the groundwater produced from the Mississippi River Alluvial aquifer is hard, and that the primary MCL for arsenic was exceeded in five of the 23 wells sampled.

Review of this data shows that this aquifer is of poor quality when considering taste, odor, or appearance guidelines, with 33 secondary standards being exceeded. It also shows that five wells exceeded the MCL for arsenic, making certain locations of this aquifer to be of poor quality when considering short-term or long-term health risk guidelines. It is important to note that there are certain localized areas of the Mississippi River Alluvial aquifer that exhibit good water quality characteristics, but it still exhibits the poorest overall water quality characteristics of any of the fourteen aquifers or aquifer systems sampled.

Cockfield Aquifer

Fourteen wells ranging in depth from 80 feet to 445 feet, with an average depth of 246 feet were sampled for this aquifer. Laboratory and field data show that the groundwater produced from this aquifer is of good quality when considering short or long-term health risk guidelines. The data also show that this aquifer is moderately hard and is of poor quality when considering taste, odor, or appearance guidelines, with 21 secondary standards exceeded in 13 of the 14 wells sampled.

Chicot Aquifer

Twenty-three wells ranging in depth from 66 feet to 697 feet, with an average depth of 335 feet were sampled for this aquifer. Laboratory and field data show that no assigned well sampled during this reporting period for the Chicot aquifer exceeded a primary MCL, while 35 SMCLs were exceeded. These findings show that the water produced from the Chicot aquifer is of good quality when considering short-term or long-term health risk guidelines. The data also show that the water produced from the Chicot aquifer is hard and is of poor quality when considering taste, odor, or appearance guidelines.

Williamson Creek Aquifer

Seven wells ranging in depth from 190 feet to 1,657 feet, with an average depth of 628 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during

this reporting period for the Williamson Creek aquifer exceeded a primary MCL and only three secondary standards were exceeded. Review of the data shows that the water produced from the Williamson Creek aquifer is soft, is of good quality when considering short-term or long-term health risk guidelines, and is also of good quality when considering taste, odor, or appearance guidelines.

Chicot Equivalent Aquifer System

Twenty-five wells ranging in depth from 90 feet to 775 feet, with an average depth of 342 feet were sampled for this aquifer. Laboratory and field data show that the groundwater produced from this aquifer is moderately hard and is of good quality when considering short-term or long-term health risk guidelines. The data also show that this aquifer is of fair quality when considering taste, odor, or appearance guidelines, with 26 secondary standards exceeded in 16 wells.

Evangeline Equivalent Aquifer System

Sixteen wells ranging in depth from 185 feet to 2,004 feet, with an average depth of 963 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Evangeline Equivalent Aquifer System exceeded a primary MCL, whereas 16 secondary standards were exceeded. The data show that the water produced from the Evangeline Equivalent aquifer system is soft and of good quality when considering short-term or long-term health risk guidelines, and is also of good quality when considering taste, odor, or appearance guidelines.

Jasper Equivalent Aquifer System

Fifteen wells ranging in depth from 960 feet to 2,700 feet, with an average depth of 2,025 feet were sampled for this aquifer. Laboratory and field data show that no assigned well that was sampled during this reporting period for the Jasper Equivalent Aquifer System exceeded a primary MCL, while 11 secondary standards were exceeded. The data also show that the water produced from the Jasper Equivalent aquifer system is soft and of good quality when considering short-term or long-term health risk guidelines, and is of good quality when considering taste, odor, or appearance guidelines.

STATEWIDE SUMMARY OF FINDINGS

COMBINED AQUIFER DATA AND HISTORICAL COMPARISON

Table 7 shows the minimum and maximum sample results from the fourteen aquifers and aquifer systems that were sampled for field parameters, conventional parameters (water quality and nutrients), and inorganics (total metals), as well as an average of all these sample results. A comparison of the current average values of each parameter to the historical average values of the four previous reporting periods ([2000, 2003, 2006, and 2009 Triennial Summary Reports](#)) shows that there was little or no change for the majority of the parameters measured. Of the thirty-two parameters compared, only four exhibited notable changes in average values. The statewide average for pH exhibited a slight but consistent increase of about one half a Standard pH Unit (0.5 SU) from 2000 to 2012 and the statewide chloride average increased by approximately 10 mg/L. The statewide average for color decreased by about 2 PCU's and the statewide average for copper decreased by approximately 30 µg/L during this time period. However, this decrease in copper may be related to the condition of wells sampled rather than an actual decrease in copper concentrations.

Table 1 highlights the minimum, maximum, and average statewide values for pH, TDS, hardness, chloride, iron, and nitrite-nitrate found in Table 7. The only statewide average listed in Table 1 that did not meet federal drinking water standards is the average for iron, which is not a health-related primary standard, but an aesthetic, non-enforceable, secondary standard. Figures 4 – 9 are the graphed representations of the average values for these same parameters on an aquifer by aquifer basis for this reporting period, July 2009 – June 2010.

Figures 10 – 29 are the graphed representations of selected analytes resulting from the statewide average for each analyte for each three year period from 2000 to 2012. Some are presented in logarithmic scale to more readily show the relationship between the graphed values and the various limits associated with the analyte.

FEDERAL PRIMARY MCL EXCEEDANCES

A review of the laboratory and field data from all the aquifers and aquifer systems sampled show that there were five exceedances of the primary MCL for arsenic, all in the Mississippi River Alluvial aquifer. For further discussion of the occurrence of arsenic in the Mississippi River Alluvial aquifer, please see Appendix 8 – Mississippi River Alluvial Aquifer Summary.

QUALITY RANKINGS

As stated previously, initial water quality is evaluated by comparing individual parameters to primary MCLs to assess the aquifer's use as a drinking water source, and is rated as good (no MCL exceedances), fair (no MCL exceedances in a drinking water well), or poor (one or more MCL exceedance in a drinking water well). Additionally a second water quality evaluation is made by taking into account whether or not Action Levels were exceeded, whether or not volatile organic compounds, semi-volatile organic compounds, pesticides or PCBs were detected, the number of secondary standards exceeded in relation to the number of wells sampled, and the average hardness value. This rating uses values of good, fair and poor.

Using the above stated criteria against the data derived from the FY10 – FY12 sampling time period it was determined, based on initial evaluation, that 13 of the 14 aquifers and aquifer systems monitored exhibit good water quality characteristics while one exhibited poor water quality characteristics.

Secondary evaluation shows that seven are in the good range; three are in the fair range and four are considered to be poor.

Those aquifers and aquifer systems considered by the ASSET Program to have Good water quality characteristics in both categories are: Carrizo-Wilcox, Carnahan Bayou, Catahoula, Evangeline, Evangeline Equivalent, Jasper Equivalent, and Williamson Creek. The Chicot Equivalent, Sparta, and North Louisiana Terrace aquifers are considered to have Good water quality in the initial category and Fair water quality in the second category. Aquifers considered having Good initial water quality with Poor secondary water quality characteristics are the Chicot, Cockfield, and Red River Alluvial aquifers. The Mississippi River Alluvial aquifer is considered to have Poor initial and secondary water quality characteristics by this Program.

SUMMARY STATEMENT

The majority of the major freshwater aquifers of Louisiana that were sampled by the ASSET Program exhibited Good water quality characteristics when considering health based standards and Fair to Good water quality characteristics when considering non-health based standards. Half of the aquifers sampled exhibited Good water quality characteristics in both categories, while only the Mississippi River Alluvial aquifer exhibited Poor water quality characteristics in both categories.

Those aquifers with deeper average well depths typically exhibit the best water quality characteristics while those with shallower average well depths exhibit some of the poorest water quality characteristics. One notable exception to this is the North Louisiana Terrace aquifer that has an average well depth of just over 100 feet and exhibits similar water quality characteristics to those aquifers with much deeper average well depths.

Taking into account short-term and long-term health risk guidelines, along with the findings of the Aquifer Sampling and Assessment Program for the Fiscal Years 2000 to 2012, it is determined that the overall quality of the waters produced from Louisiana’s principal freshwater aquifers is good, and that there is very little change in the water quality characteristics of these aquifers.

TABLES AND FIGURES

Table 1 – Select Statewide Values

PARAMETER	MINIMUM	AVERAGE	MAXIMUM	DRINKING WATER LIMITS (PRIMARY OR SECONDARY)
pH (SU)	5.02	7.57	9.31	>6.5 - <8.5 Secondary
Chloride (mg/L))	< 1.25	58.3	724	250 Secondary
TDS (mg/L)	< 10	400	1,510	500 Secondary
Hardness (mg/L)	< 5	91	660	N/A
Iron (ug/L)	< 100	1,302	15,800	300 Secondary
Nitrite-Nitrate (mg/L)	< 0.01	0.18	9.77	10 Primary



Table 2 – Hydrogeologic Column of Aquifers

SYSTEM	SERIES	Stratigraphic Unit		Hydrogeologic Unit													
				Northern Louisiana		Central and southwestern Louisiana		Southeastern Louisiana									
				Aquifer or confining unit	Aquifer system or confining unit	Aquifer or confining unit		Aquifer system or confining unit	Aquifer ¹ or confining unit								
						Lake Charles area	Rice growing area		Baton Rouge area	St. Tammany, Tangipahoa, and Washington Parishes	New Orleans area and lower Mississippi River parishes						
Quaternary	Pleistocene	Red River alluvial deposits Miss. River alluvial deposits Northern La. Terrace deposits Unnamed Pleistocene deposits		Red River alluvial aquifer or surficial confining unit Mississippi River alluvial aquifer or surficial confining unit Upland terrace aquifer or surficial confining unit		Chicot aquifer system or surficial confining unit		Chicot Equivalent aquifer system ² or surficial confining unit		Mississippi River alluvial aquifer or surficial confining unit Shallow sand "400-foot" sand "600-foot" sand		Upland terrace aquifer Upper Ponchatoula aquifer		Gramercy aquifer ³ Norco aquifer ³ Gonzales-New Orleans Aquifer ³ "1,200-foot" sand ³			
				Pliocene		Pliocene-Miocene aquifers are absent in this area		Evangeline aquifer or surficial confining unit		Evangeline equivalent aquifer system ² or surficial confining unit		"800-foot" sand "1,000-foot" sand "1,200-foot" sand "1,500-foot" sand "1,700-foot" sand		Lower Ponchatoula Aquifer Big Branch aquifer Kentwood aquifer Abita aquifer Covington aquifer Slidell aquifer			
Tertiary	-----?-----	Fleming Formation		Blounts Creek Member		Castor Creek confining unit		Jasper aquifer system or surficial confining unit		Williamson Creek aquifer Dough Hills confining unit Carnahan Bayou aquifer		Jasper equivalent aquifer system ² or surficial confining unit		"2,000-foot" sand "2,400-foot" sand "2,800-foot" sand		Tchefuncte aquifer Hammond aquifer Amite aquifer Ramsay aquifer Franklinton aquifer	
	Miocene			Castor Creek Member													
	-----?-----			Williamson Creek Member Dough Hills Member Carnahan Bayou Member													
	Oligocene			Lena Member													
	Catahoula Formation		Catahoula aquifer		Lena confining unit		Unnamed confining unit										
	Vicksburg Group, undifferentiated		Vicksburg-Jackson confining unit														
	Jackson Group, undifferentiated																
	Eocene	Claiborne Group		Cockfield Formation		Cockfield aquifer or surficial confining unit		No fresh water occurs in older aquifers									
				Cook Mountain Formation		Cook Mountain aquifer or confining unit											
				Sparta Sand		Sparta aquifer or surficial confining unit											
Cane River Formation				Cane River aquifer or confining unit													
Carrizo Sand				Carrizo-Wilcox aquifer or surficial confining unit													
Paleocene	Wilcox Group, undifferentiated																
	Midway Group, undifferentiated		Midway confining unit														

¹Clay units separating aquifers in southeastern Louisiana are discontinuous

²Four aquifer systems as a group are called the Southern Hills aquifer system.

³Four aquifers as a group are called the New Orleans aquifer system.

Source: DOTD/USGS Water Resources Special Report No. 9, 1995



Table 3 - Aquifers and Aquifer Systems Monitored

AQUIFER OR SYSTEM	WELL DEPTH RANGE (feet)	AVERAGE WELL DEPTH (feet)	NUMBER OF WELLS	AREAL EXTENT (sq.mi.)	WELL DENSITY (sq. mi./well)
Sparta Aquifer	153 – 773	523	14	6,923	494
Carrizo-Wilcox Aquifer	105 – 410	258	12	4,795	399
Red River Alluvial Aquifer	58 – 89	73	5	1,387	277
Evangeline Aquifer	170 – 1,715	635	12	4,547	378
Catahoula Aquifer	352 – 910	678	5	2,590	518
North Louisiana Terrace Aquifer	49 – 158	107	11	2,152	195
Carnahan Bayou Aquifer	66 – 2,036	801	10	3,640	364
Mississippi River Alluvial Aquifer	30 – 352	129	23	9,947	432
Cockfield Aquifer	80 – 445	246	14	5,161	368
Chicot Aquifer	66 – 697	335	23	9,949	432
Williamson Creek Aquifer	190 – 1,657	628	7	3,243	463
Chicot Equivalent Aquifer System	90 – 775	342	25	6,800	272
Evangeline Equivalent Aquifer System	185 – 2,004	963	16	6,252	390
Jasper Equivalent Aquifer System	960 – 2,700	2,025	15	6,051	403
STATEWIDE	30ft – 2,700ft	540ft	192 wells	73,437sq.mi.	382sq.mi./well

Table 4 – Aquifers and Number of Wells Sampled by Month

AQUIFER/SYSTEM	MONTH(S) SAMPLED	NUMBER OF WELLS SAMPLED	TOTAL NUMBER OF WELLS SAMPLED PER AQUIFER
State Fiscal Year 2010 (July 2009 – June 2010)			
Sparta	July	4	14
	August	10	
Carrizo-Wilcox	August	1	12
	September	3	
	October	3	
	November	5	
Red River Alluvial	October	3	5
	November	2	
Evangeline	January	11	12
	March	1	
Catahoula	February	3	5
	March	2	
North Louisiana Terrace	March	9	10
	May	1	
Carnahan Bayou	January	1	10
	April	9	
State Fiscal Year 2011 (July 2010 – June 2011)			
Mississippi River Alluvial	July	15	23
	September	7	
	February	1	
Cockfield	November	7	14
	January	5	
	February	1	
	April	1	
Chicot	February	3	23
	March	3	
	April	9	
	May	8	
State Fiscal Year 2012 (July 2011 – June 2012)			
Williamson Creek	July	7	7
Chicot Equivalent	August	7	23
	September	9	
	October	4	
	November	5	
Evangeline Equivalent	February	4	16
	March	11	
	May	1	
Jasper Equivalent	April	15	15

Figure 1 – Number of Wells Sampled by Aquifer

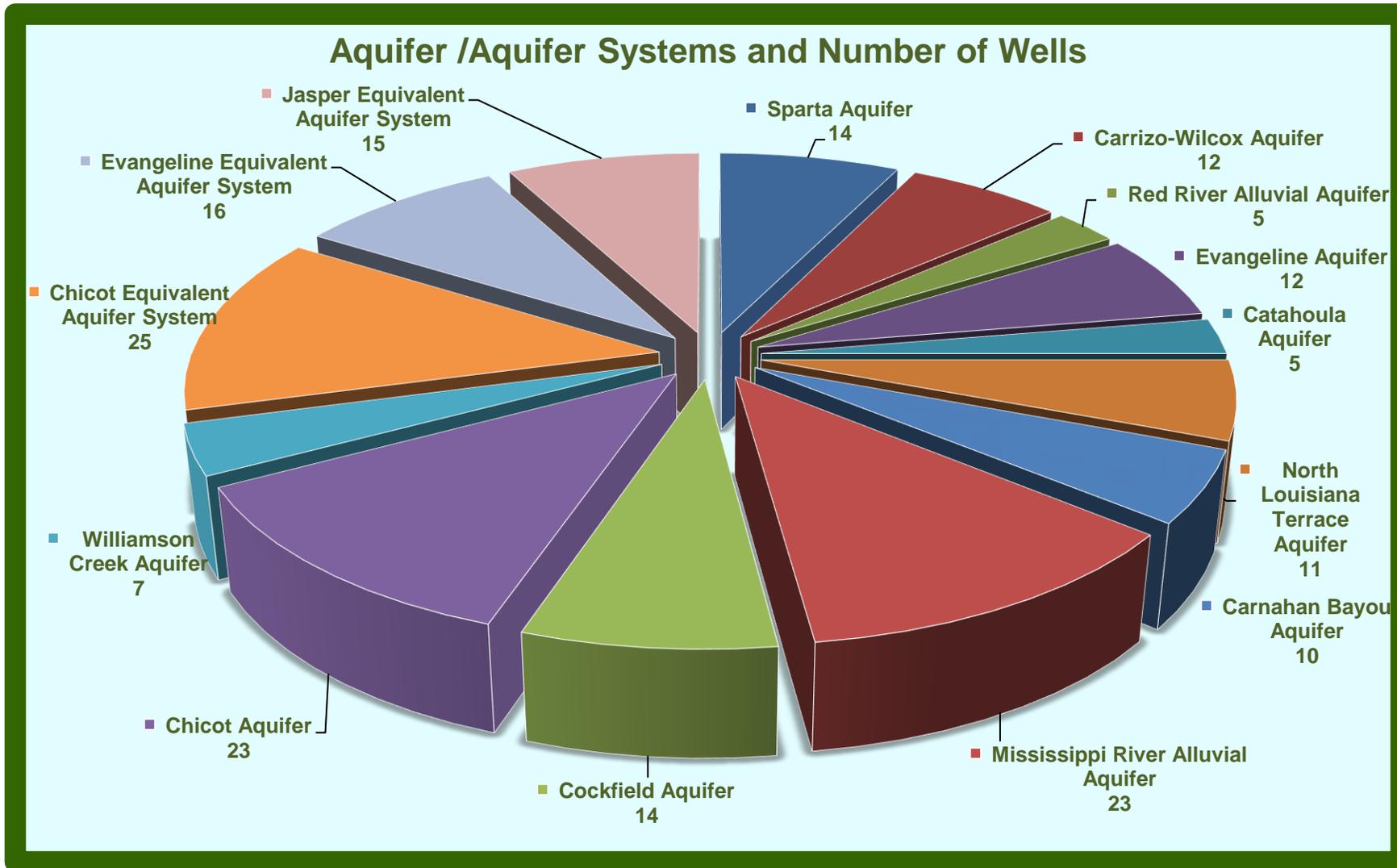


Figure 2 – Aquifer Areal Extent

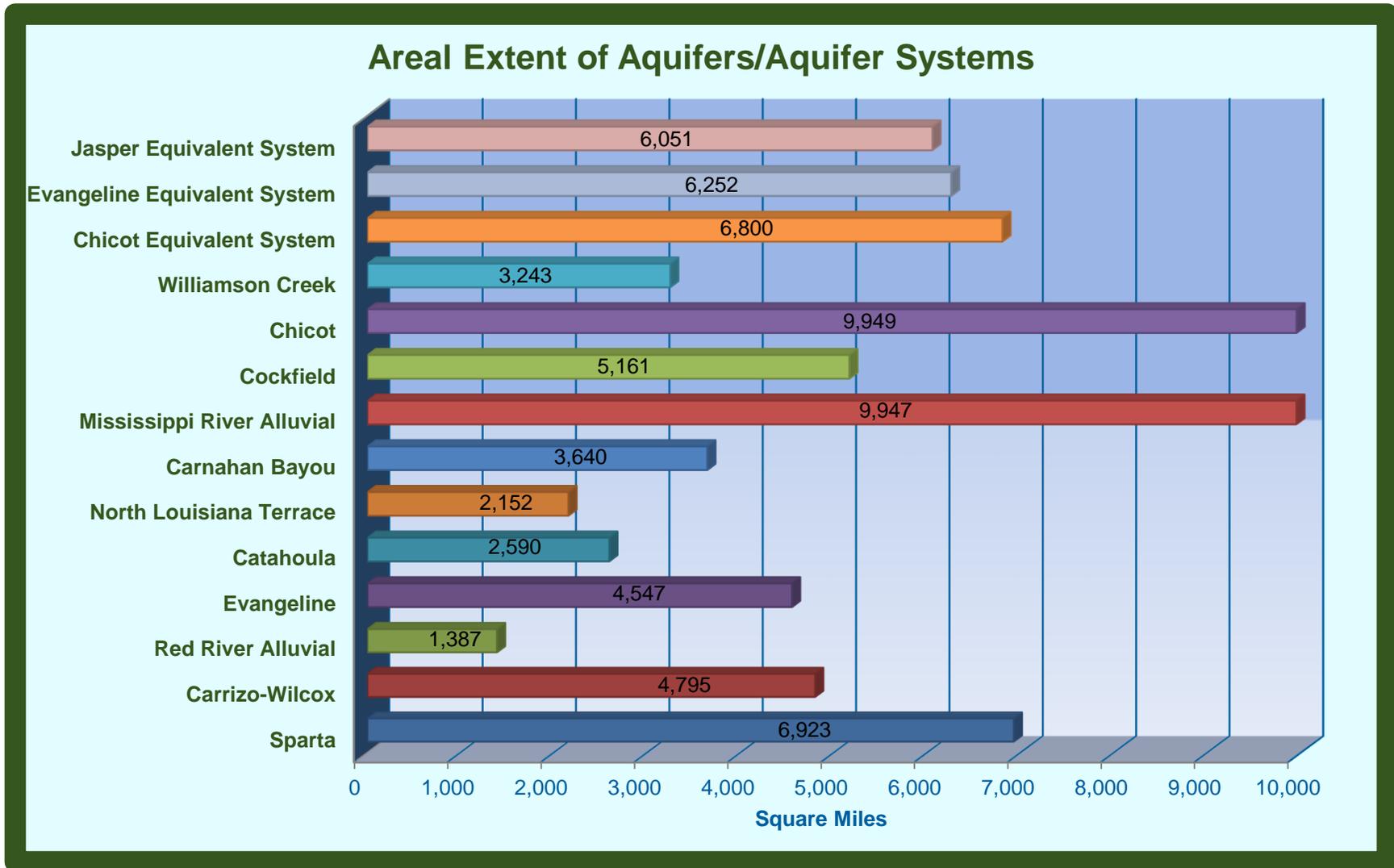


Figure 3 – Well Depth Statistics

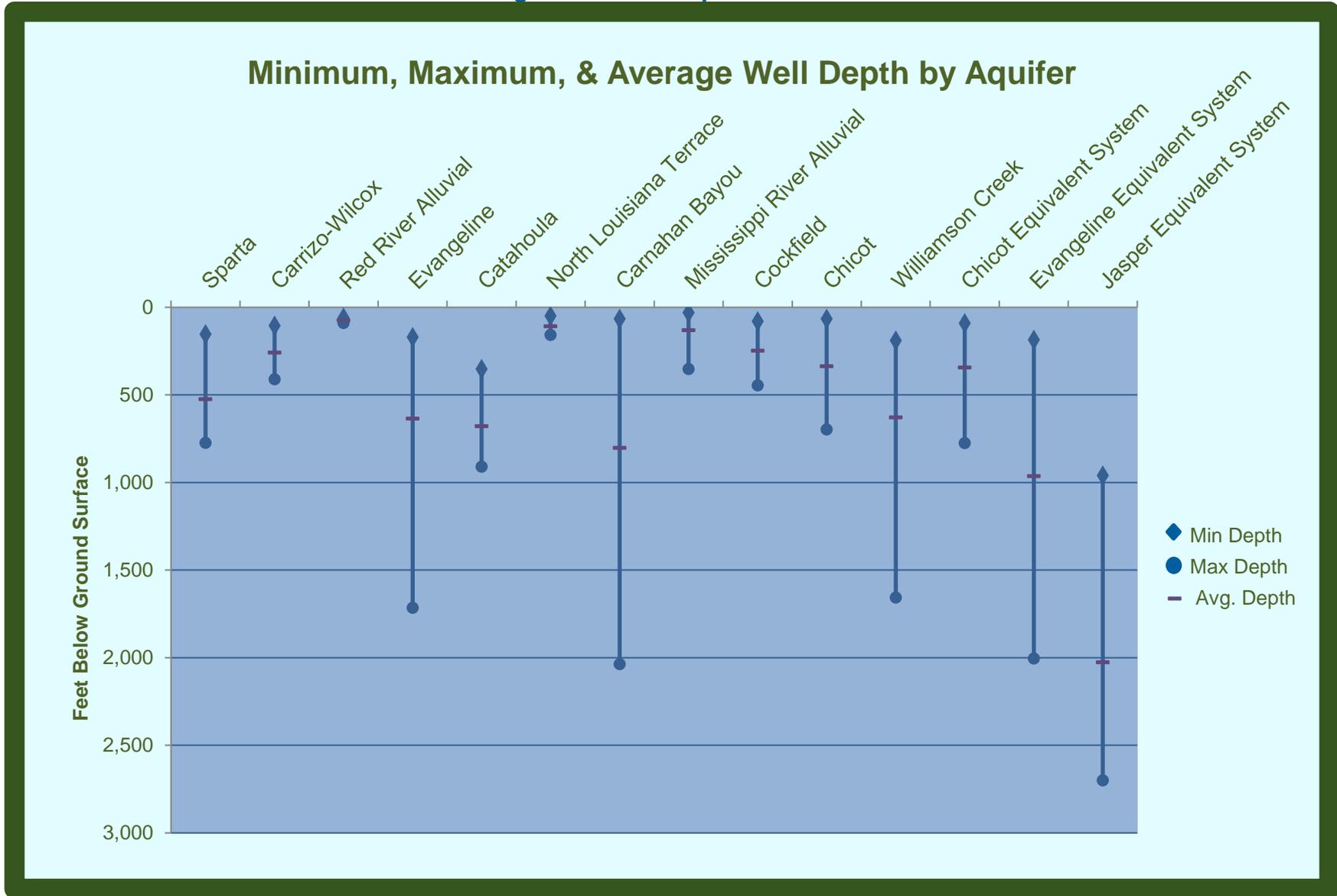


Table 5 – Field, Water Quality, & Nutrients Data Summary by Aquifer/Aquifer System

	FIELD PARAMETERS					LABORATORY PARAMETERS												
	pH SU	Sal. ppt	Sp. Cond. mmhos/cm	TDS g/L	Temp. Deg. C	Alk. mg/L	NH3 mg/L	Cl mg/L	Color PCU	Hard mg/L	Nitrite-Nitrate (as N) mg/L	TKN mg/L	Tot. P mg/L	Sp. Cond. umhos/cm	SO4 mg/L	TDS mg/L	TSS mg/L	Turb NTU
	LABORATORY DETECTION LIMITS →					2/5	1/0.1/0.05	1.25	1	5	0.01/0.05	0.5/0.3/0.1	0.05	10	5/1.25/1/0.25	10	4	0.3/0.1
SPARTA AQUIFER																		
Min	5.77	0.01	0.025	0.016	19.82	8	< 1	< 1.25	< 1	< 5	< 0.01	< 0.3	< 0.05	27	< 5	23	< 4	< 0.3
Avg	7.86	0.35	0.710	0.460	22.92	208	< 1	97.7	8.9	12.2	0.26	0.43	0.34	693	8	454	< 4	4.8
Max	9.31	1.02	2.012	1.308	26.85	538	< 1	466.0	31.0	60.0	1.66	1.05	0.82	1,950	20	1,120	16	34.3
CARRIZO-WILCOX AQUIFER																		
Min	5.76	0.14	0.292	0.190	18.76	22	< 1	19.1	< 1	< 5	< 0.01	< 0.3	< 0.05	280	< 5	209	< 4	< 0.3
Avg	8.17	0.41	0.816	0.530	20.29	295	< 1	77.2	2.8	13.5	0.05	0.33	0.36	799	29.0	497	4.7	2.9
Max	8.84	0.77	1.520	0.988	23.03	612	< 1	198.0	16.0	64.0	0.45	0.95	1.07	1,460	269.0	940	36.0	14.0
RED RIVER ALLUVIAL AQUIFER																		
Min	6.91	0.44	0.885	0.575	19.18	382	< 1	13.9	< 1	100	< 0.01	< 0.3	0.15	720	< 5	472	< 4	5.4
Avg	7.04	0.51	1.034	0.670	19.96	486	< 1	50.8	1.4	401	0.33	0.34	0.72	950	14.2	607	18.3	75.7
Max	7.12	0.75	1.485	0.965	21.17	676	< 1	130.0	4.0	660	1.97	0.70	1.33	1,380	38.5	889	54.0	157.0
EVANGELINE AQUIFER																		
Min	6.73	0.01	0.034	0.020	18.02	6.0	< 1	3.4	< 1	< 5	< 0.01	< 0.3	< 0.05	38	< 5	35	< 4	< 0.3
Avg	7.98	0.24	0.481	0.310	21.43	178.7	< 1	41.8	8.3	< 5	0.010	< 0.3	0.21	470	8.2	461	< 4	< 0.3
Max	8.99	0.66	1.308	0.85	25.31	430	< 1	210.0	24.0	< 5	0.054	< 0.3	0.46	1,360	70.2	1,330	< 4	1.0
CATAHOULA AQUIFER																		
Min	7.21	0.09	0.197	0.128	20.27	96	0.21	3.6	3.0	< 5	< 0.01	< 0.3	0.10	195	0.3	139	< 4	< 0.3
Avg	7.61	0.14	0.292	0.190	22.98	118	0.25	14.6	7.0	< 5	< 0.01	0.65	0.50	280	8.9	236	< 4	< 0.3
Max	8.21	0.17	0.360	0.234	25.33	138	0.34	32.8	12.0	< 5	< 0.01	0.41	0.98	349	16.2	319	< 4	0.8
NORTH LOUISIANA TERRACE AQUIFER																		
Min	5.65	0.02	0.045	0.030	17.90	8.0	< 0.05	3.4	< 1	< 5	< 0.01	< 0.3	< 0.3	47	< 0.25	39	< 4	< 0.3
Avg	6.55	0.23	0.462	0.300	18.71	126.3	< 0.05	67.5	9.4	123.8	0.48	< 0.3	0.19	477	18.6	435	7.46	4.8
Max	7.60	0.83	1.642	1.070	20.30	334.0	0.08	323.0	25.0	410.0	3.87	0.65	0.44	1,590	97.3	1,510	28.0	23.4
CARNAHAN BAYOU AQUIFER																		
Min	6.30	0.01	0.029	0.020	18.34	14.0	< 0.05	2.9	< 1	< 5	< 0.01	< 0.3	< 0.3	31	< 1.25	21	< 4	< 0.3
Avg	7.61	0.22	0.463	0.300	23.61	123.6	0.37	43.4	3.6	14.8	0.01	0.50	< 0.3	384	10.0	359	< 4	1.5
Max	8.33	0.93	1.870	1.22	34.95	318.0	0.77	369.0	8.0	138.0	0.09	1.21	0.63	1,520	33.3	1,490	< 4	0.77



Table 5 (Cont'd) – Field, Water Quality, & Nutrients Data Summary by Aquifer/Aquifer System

	FIELD PARAMETERS					LABORATORY PARAMETERS												
	pH SU	Sal. ppt	Sp. Cond. mmhos/cm	TDS g/L	Temp. Deg. C	Alk. mg/L	NH3 mg/L	Cl mg/L	Color PCU	Hard mg/L	Nitrite-Nitrate (as N) mg/L	TKN mg/L	Tot. P mg/L	Sp. Cond. umhos/cm	SO4 mg/L	TDS mg/L	TSS mg/L	Turb NTU
LABORATORY DETECTION LIMITS →					2/5	1/0.1/0.05	1.25	1	5	0.01/0.05	0.5/0.3/0.1	0.05	10	5/1.25/1/0.25	10	4	0.3/0.1	
MISSISSIPPI RIVER ALLUVIAL AQUIFER																		
Min	6.92	0.10	0.207	0.14	15.21	6.0	< 0.05	10.2	< 1	< 5	< 0.01	0.11	< 0.05	196	< 1.25	117	< 4	< 0.3
Avg	7.35	0.40	0.811	0.53	19.13	240.2	0.85	54.9	4.9	294.0	0.21	1.25	0.57	709	17.0	577	12.1	52.8
Max	8.02	0.99	1.942	1.26	24.00	550.0	3.42	509.0	16.0	610.0	3.04	4.57	1.29	1,870	182.0	1,510	42.0	184.0
COCKFIELD AQUIFER																		
Min	5.12	0.06	0.123	0.080	13.50	< 5	< 0.05	2.9	< 1	< 5	< 0.01	< 0.1	< 0.05	118	< 1.25	93	< 4	< 0.3
Avg	7.17	0.33	0.668	0.430	18.08	257.8	0.51	41.3	16	130.0	0.60	0.54	0.36	590	22.2	485	< 4	6.3
Max	8.82	0.64	1.280	0.830	20.41	460.0	1.42	199.0	82	470.0	9.77	1.92	1.53	1,150	142.0	889	9.0	22.1
CHICOT AQUIFER																		
Min	5.46	0.01	0.025	0.016	18.14	5.0	< 0.01	2.6	< 1	< 5	< 0.01	< 0.1	< 0.05	23	< 0.25	< 10	< 4	< 0.3
Avg	7.28	0.30	0.61	0.40	20.91	210.2	0.40	67.7	8.6	94.1	0.09	0.63	0.20	571	3.3	370	7.4	12.3
Max	8.46	0.91	1.802	1.170	25.74	480.0	1.86	416.0	62.0	248.0	0.69	4.71	0.48	1,740	25.9	967	99.0	135.0
WILLIAMSON CREEK																		
Min	6.66	0.07	0.151	0.098	19.91	62.0	0.10	5.8	< 1	< 5	< 0.01	0.24	< 0.05	367	< 0.25	71	< 4	< 0.3
Avg	7.58	0.20	0.420	0.280	22.84	142.8	0.02	44.1	3.1	30.7	0.02	0.43	0.18	505	3.7	256	< 4	2.81
Max	8.56	0.30	0.617	0.400	29.69	224.0	0.59	99.3	11.0	130.0	0.16	0.65	0.44	614	8.5	402	< 4	10.9
CHICOT EQUIVALENT AQUIFER SYSTEM																		
Min	5.02	0.01	0.028	0.018	18.73	2.1	< 0.1	3.5	2.5	12.0	< 0.05	< 0.5	0.19	27	0.50	< 10	< 4	< 0.1
Avg	7.21	0.24	0.470	0.320	21.15	134.5	0.56	112.8	8.9	107.0	0.19	0.78	0.45	565	2.6	388	< 4	2.4
Max	8.58	0.96	1.888	1.227	23.33	426.0	1.89	724.0	75.0	340.0	1.50	2.50	0.91	2,020	18.3	1,320	5.5	41.6
EVANGELINE EQUIVALENT AQUIFER SYSTEM																		
Min	5.81	0.02	0.050	0.032	17.48	5.0	< 0.05	3.1	< 5	< 5	< 0.05	< 0.5	< 0.05	47	< 1	10	< 4	< 0.1
Avg	7.77	0.12	0.252	0.164	22.17	112.0	0.17	6.8	< 5	12.0	0.07	< 0.5	0.24	249	6.4	163	< 4	0.2
Max	9.16	0.33	0.667	0.433	30.01	323.0	0.47	25.2	15.0	36.0	0.97	1.46	0.60	584	11.1	435	5.5	0.5
JASPER EQUIVALENT AQUIFER SYSTEM																		
Min	8.20	0.09	0.192	0.125	21.05	76.0	< 0.1	2.4	< 5	< 5	< 0.05	< 0.5	0.28	160	4.9	132	< 4	< 0.1
Avg	8.76	0.17	0.366	0.238	27.00	156.0	0.22	14.0	6.0	8.0	< 0.05	< 0.05	0.51	327	8.0	220	< 4	0.2
Max	9.24	0.43	0.883	0.574	36.08	316.0	0.75	136.0	15.0	20.0	< 0.05	1.30	0.75	160	11.3	440	< 4	0.42

Table 6 – Inorganic (Total Metals) Data Summary by Aquifer/Aquifer System

ANALYTE	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron ug/L	Lead ug/L	Mercury ug/L	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L
Laboratory Detection Limits	5/1/0.5	4/1/0.5	200/5/1	5/2/1	2/1/0.08	4/1/0.5	5/2/0.5	100	1/0.1	0.2/0.05/0.0002	3/1/0.5	5/1/0.5	1/0.5	2/1/0.1	6/5
SPARTA AQUIFER															
Min	< 5	< 4	9	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	52	< 2	< 2	< 4	5.1	740	1.0	< 0.0002	4.7	< 5	< 1	< 2	49
Max	< 5	< 4	217	< 2	< 2	5.3	40.5	5,130	9.2	0.000232	26.3	5.3	< 1	< 2	298
CARRIZO-WILCOX AQUIFER															
Min	< 5	< 4	8	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	<3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	53	< 2	< 2	< 4	4.5	507	< 1	< 0.0002	<3	< 5	< 1	< 2	39
Max	< 5	< 4	189	< 2	< 2	7.23	10.3	2,510	2.7	< 0.0002	6.9	< 5	< 1	< 2	196
RED RIVER ALLUVIAL AQUIFER															
Min	< 5	< 4	313	< 2	< 2	< 4	< 2	535	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	564	< 2	< 2	< 4	2.1	6,281	< 1	< 0.0002	4.4	< 5	< 1	< 2	13.4
Max	< 5	5.29	760	< 2	< 2	< 4	7.5	15,800	< 1	< 0.0002	< 3	< 5	< 1	< 2	44.4
EVANGELINE AQUIFER															
Min	< 5	< 4	8	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	<3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	110	< 2	< 2	< 4	4.3	107	< 1	< 0.0002	11.5	< 5	< 1	< 2	< 6
Max	< 5	4.62	428	< 2	< 2	< 4	16.5	227	< 1	< 0.0002	<3	< 5	< 1	< 2	15.4
CATAHOULA AQUIFER															
Min	< 5	< 4	< 5	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	7	< 2	< 2	< 4	3.2	< 100	< 1	< 0.0002	4.2	< 5	< 1	< 2	20.3
Max	< 5	< 4	15	< 2	< 2	4.09	14.0	312	2.3	< 0.0002	17.9	< 5	< 1	< 2	49.0
NORTH LOUISIANA TERRACE AQUIFER															
Min	< 5	< 4	< 5	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	256.0	< 2	< 2	< 4	6.9	839	1.4	< 0.0002	< 3	< 5	< 1	< 2	7.6
Max	< 5	< 4	789.0	< 2	< 2	< 4	29.8	2,520	6.6	< 0.0002	5.9	< 5	< 1	< 2	22.1
CARNAHAN BAYOU AQUIFER															
Min	< 5	< 4	< 5	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	64.8	< 2	< 2	< 4	15.5	226	< 1	< 0.0002	5.6	< 5	< 1	< 2	17.2
Max	< 5	< 4	351.0	< 2	< 2	< 4	92.9	1,200	2.45	< 0.0002	14.2	< 5	< 1	< 2	45.5

Table 6 (Cont'd) – Inorganic (Total Metals) Data Summary by Aquifer/Aquifer System

ANALYTE	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron ug/L	Lead ug/L	Mercury ug/L	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L
Laboratory Detection Limits	5/1/0.5	4/1/0.5	200/5/1	5/2/1	2/1/0.08	4/1/0.5	5/2/0.5	100	1/0.1	0.2/0.05/0.0002	3/1/0.5	5/1/0.5	1/0.5	2/1/0.1	6/5
MISSISSIPPI RIVER ALLUVIAL AQUIFER															
Min	< 5	< 4	32.0	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	10.50	402.9	< 2	< 2	< 4	< 2	5,045	< 1	< 0.0002	5.1	< 5	< 1	< 2	61.8
Max	< 5	67.70	1,330.0	< 2	< 2	20.8	11.5	15,300	1.10	< 0.0002	16.9	< 5	< 1	< 2	401.0
COCKFIELD AQUIFER															
Min	< 5	< 4	7.9	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	143.6	< 2	< 2	< 4	4.0	1,470	< 1	< 0.0002	< 3	< 5	< 1	< 2	93.8
Max	< 5	6.96	331.0	< 2	3.74	< 4	21.4	5,780	1.42	< 0.0002	11.5	< 5	< 1	< 2	797.0
CHICOT AQUIFER															
Min	< 5	< 4	27.8	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	326.9	< 2	< 2	< 4	4.8	1,432	< 1	< 0.0002	< 3	< 5	< 1	< 2	123.4
Max	< 5	< 4	956.0	< 2	< 2	< 4	53.4	11,500	3.6	< 0.0002	5.4	< 5	< 1	< 2	1,010.0
WILLIAMSON CREEK AQUIFER															
Min	< 5	< 4	36.6	< 2	< 2	< 4	< 2	< 100	< 1	< 0.0002	< 3	< 5	< 1	< 2	< 6
Avg	< 5	< 4	98.0	< 2	< 2	< 4	< 2	364	1.13	< 0.0002	< 3	< 5	< 1	< 2	43.5
Max	< 5	< 4	327.0	< 2	< 2	< 4	2.8	1,160	3.05	< 0.0002	5.6	< 5	< 1	< 2	169.0
CHICOT EQUIVALENT AQUIFER SYSTEM															
Min	< 0.5	< 0.5	< 200	< 5	< 0.08	< 0.5	< 0.5	< 100	< 0.1	< 0.2	< 0.5	< 0.5	< 0.5	< 0.1	< 5
Avg	< 0.5	0.97	< 200	< 5	< 0.08	0.7	17.6	443	1.45	< 0.2	0.7	< 0.5	< 0.5	< 0.1	37.4
Max	< 0.5	9.8	516	< 5	< 0.08	2.3	103.0	7,220	8.20	0.13	2.2	0.78	< 0.5	< 0.1	488.0
EVANGELINE EQUIVALENT AQUIFER SYSTEM															
Min	< 1	< 1	1.6	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
Avg	< 1	< 1	40.8	< 1	< 1	< 1	6.2	152	< 1	< 0.05	< 1	< 1	< 1	< 1	6.0
Max	< 1	< 1	101.0	< 1	< 1	1.2	41.6	1,640	3.51	< 0.05	3.0	< 1	< 1	< 1	27.0
JASPER EQUIVALENT AQUIFER SYSTEM															
Min	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 100	< 1	< 0.05	< 1	< 1	< 1	< 1	< 5
Avg	< 1	< 1	12.1	< 1	< 1	< 1	< 5	< 100	0.64	< 0.05	< 1	< 1	< 1	< 1	3.0
Max	< 1	< 1	48.1	< 1	< 1	< 1	6.4	< 100	1.69	< 0.05	< 1	< 1	< 1	< 1	10.6

Table 7 – Data Summary of All Aquifers/Aquifer Systems

WATER QUALITY PARAMETERS	FIELD PARAMETERS					LABORATORY PARAMETERS												
	pH SU	Sal. ppt	Sp. Cond. mmhos/cm	TDS g/L	Temp. Deg. C	Alk. mg/L	NH3 mg/L	Cl mg/L	Color PCU	Hard mg/L	Nitrite-Nitrate (as N) mg/L	TKN mg/L	Tot. P mg/L	Sp. Cond. umhos/cm	SO4 mg/L	TDS mg/L	TSS mg/L	Turb NTU
	LABORATORY DETECTION LIMITS* →					2/5	1 0.1 0.05	1.25	5 1	5	0.05 0.01	0.5 0.3 0.1	0.05	10	5 1.25 1 0.25	10	4	0.3 0.1
COMBINED AQUIFER AND AQUIFER SYSTEM DATA																		
Min	5.02	0.01	0.025	0.016	13.50	2.1	< DL	< DL	1.0	< DL	< DL	< DL	< DL	23	< DL	< DL	< DL	< DL
Avg	7.57	0.28	0.569	0.371	21.35	192.3	0.45	58.3	7.2	90.5	0.18	0.95	0.32	547	9.6	399	5.1	9.94
Max	9.31	1.02	2.012	1.308	36.08	676.0	3.42	724.0	82.0	660.0	9.77	4.71	1.53	2,020	269.0	1,510	99.0	184.0
DETECTION LIMITS* →	INORGANIC (TOTAL METALS) PARAMETERS																	
	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron ug/L	Lead ug/L	Mercury ug/L	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L			
	5 1 0.5	4 1 0.5	200 5 1	5 2 1	2 1 0.08	4 1 0.5	5 2 0.5	100	1 0.1	0.2 0.05 0.0002	3 1 0.5	5 1 0.5	1 0.5	2 1 0.1	6 5			
COMBINED AQUIFER AND AQUIFER SYSTEM DATA																		
Min	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Avg	<DL	<DL	148	<DL	<DL	<DL	5.32	1,302	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	39
Max	<DL	67.7	1,330	<DL	<DL	20.8	103.0	15,800	9.23	0.13	26.3	5.31	<DL	<DL	<DL	<DL	1,010	

Detection limits vary due to different labs performing analyses over the three year period.



Figure 4 – Average pH Values

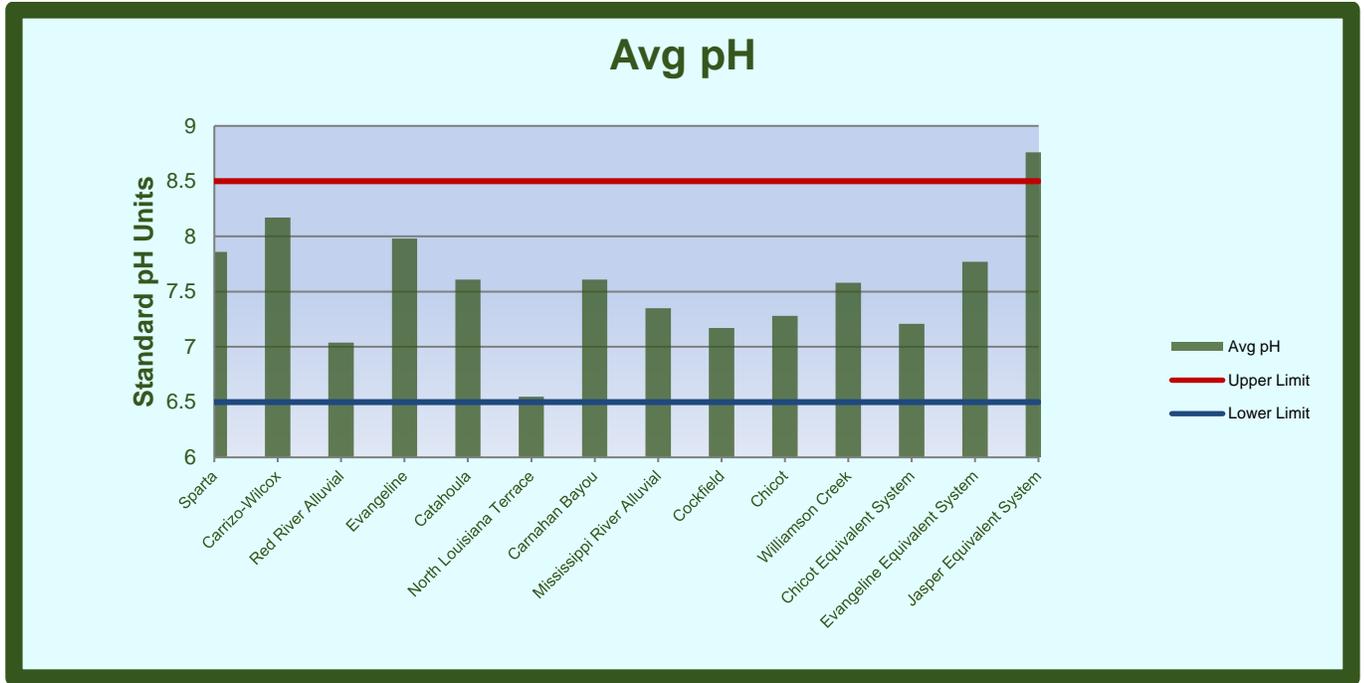


Figure 5 – Average Chloride Values

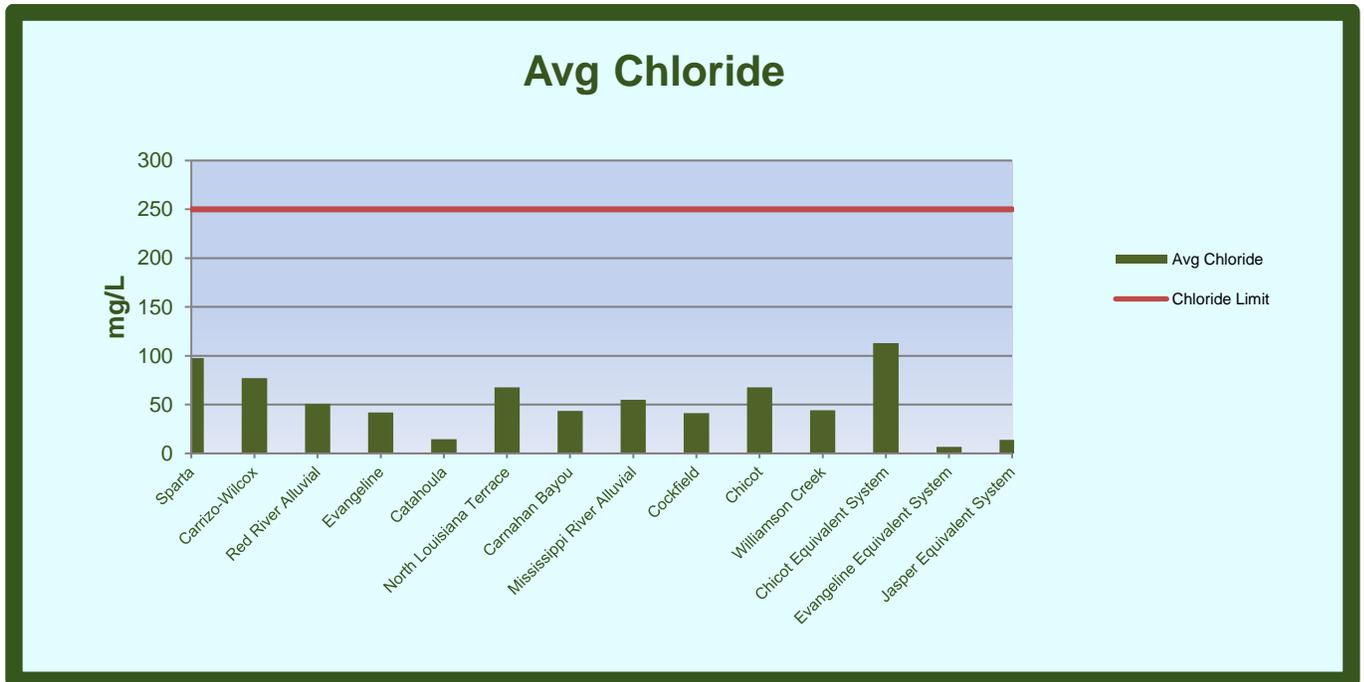


Figure 6 – Average TDS Values

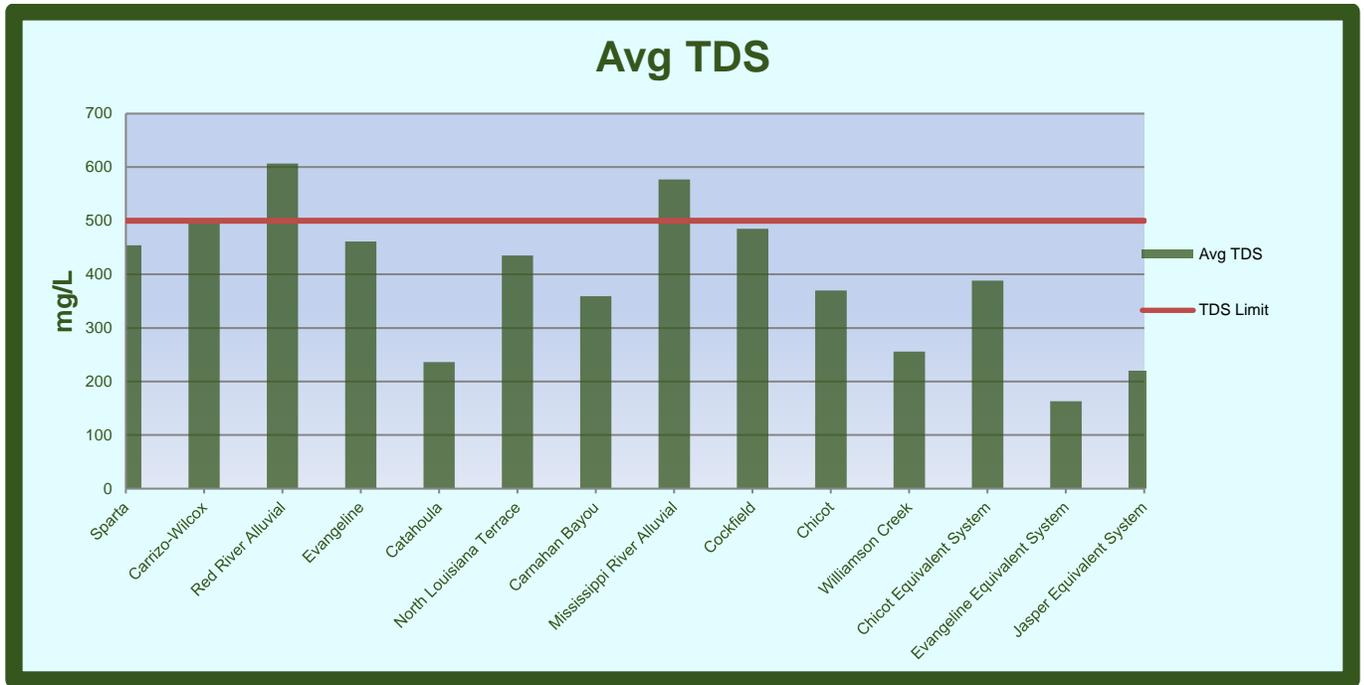


Figure 7 – Average Hardness Values

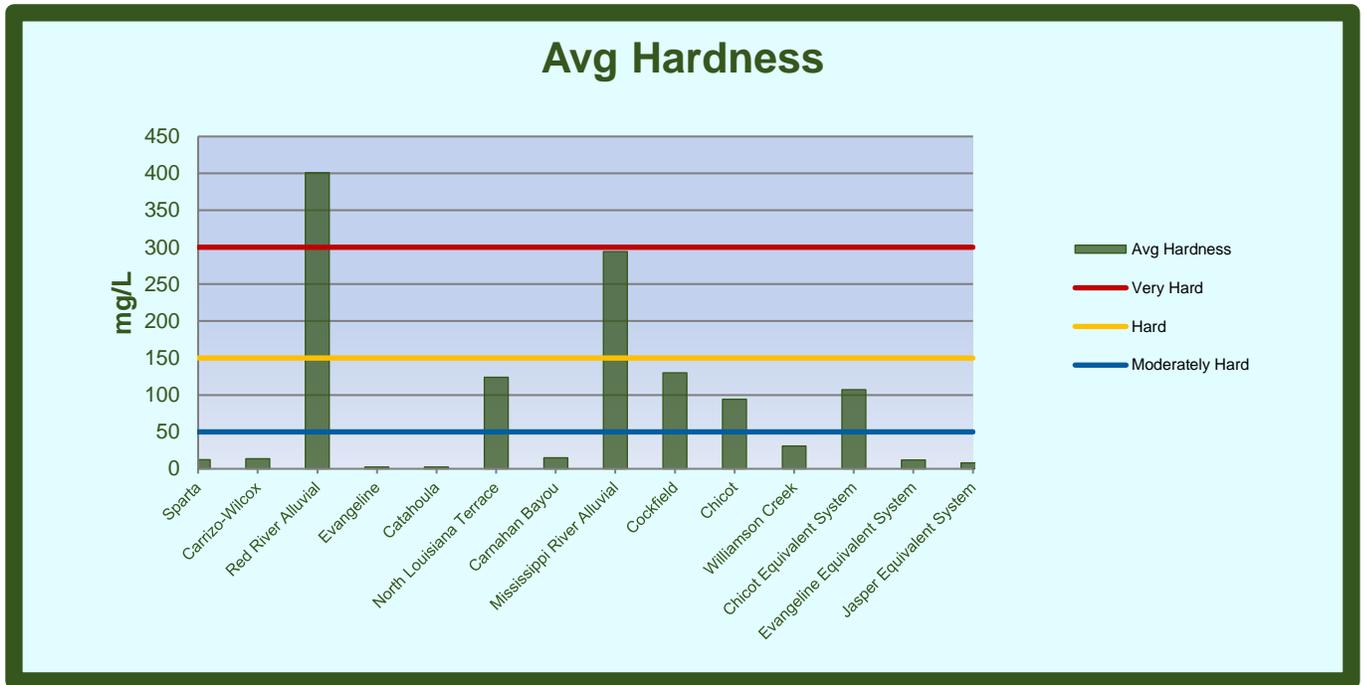


Figure 8 – Average Iron Values

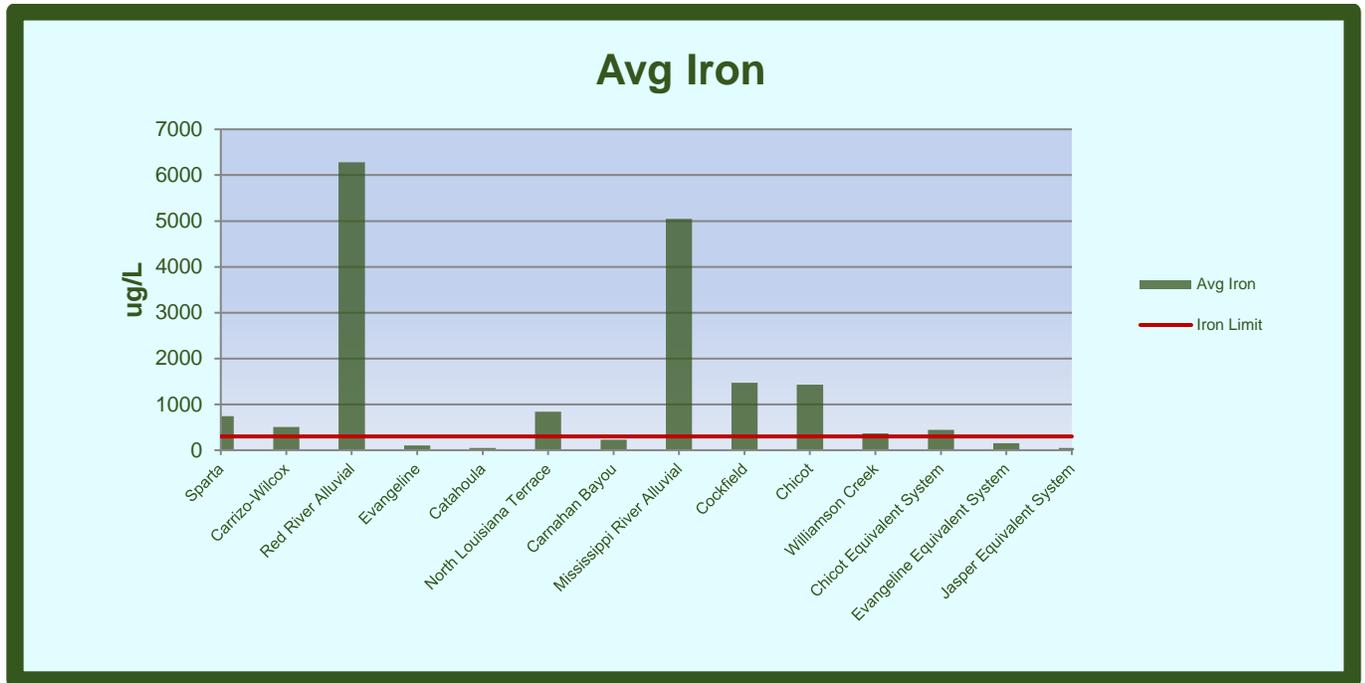
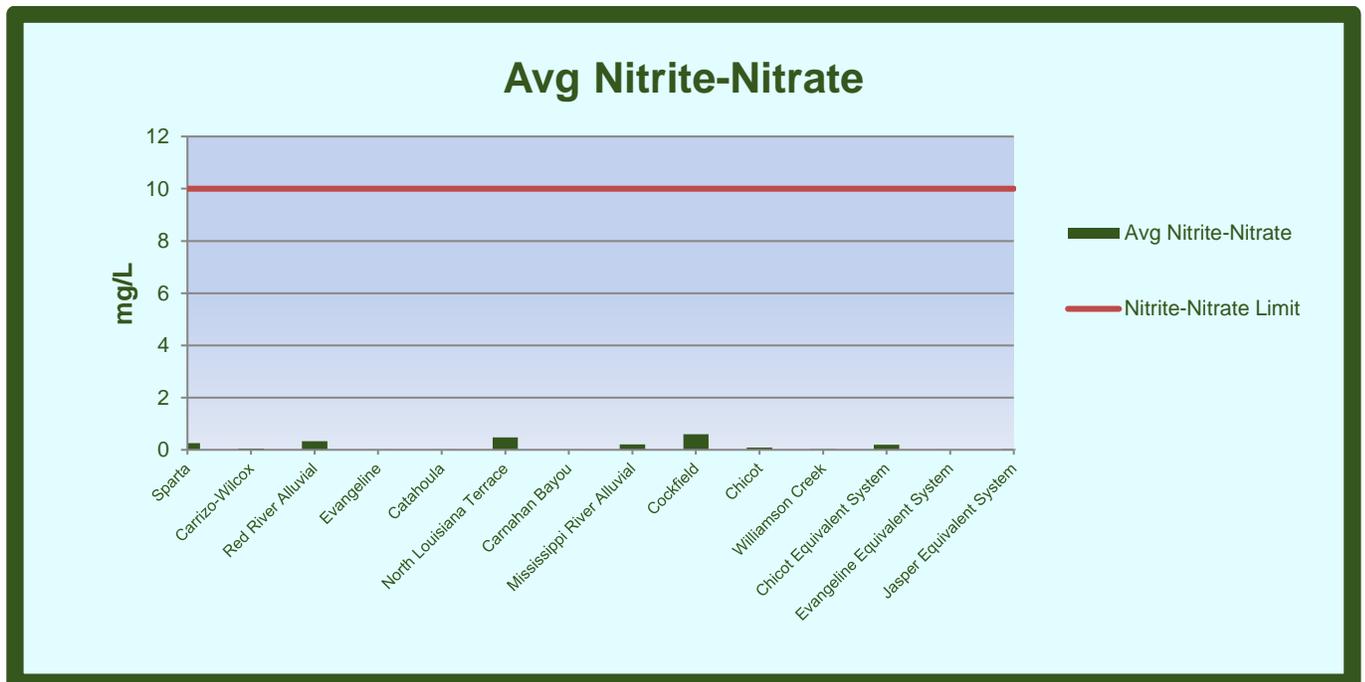
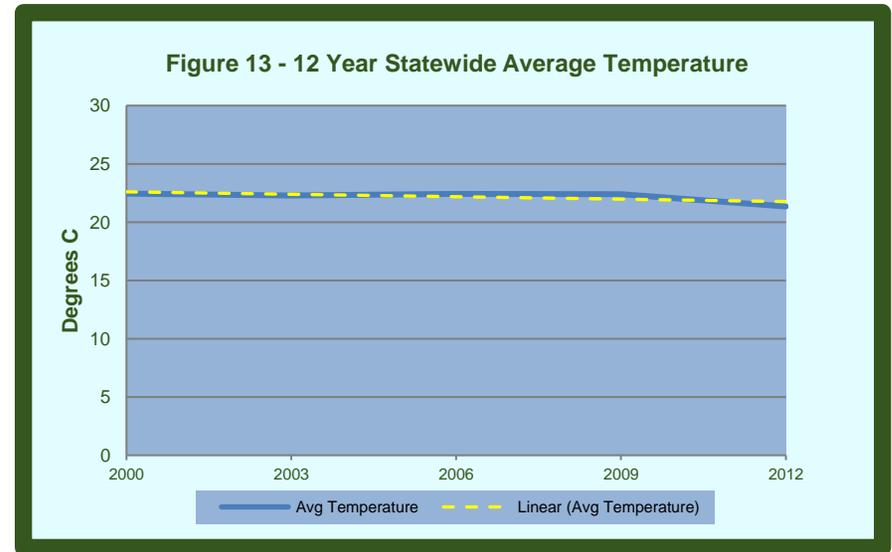
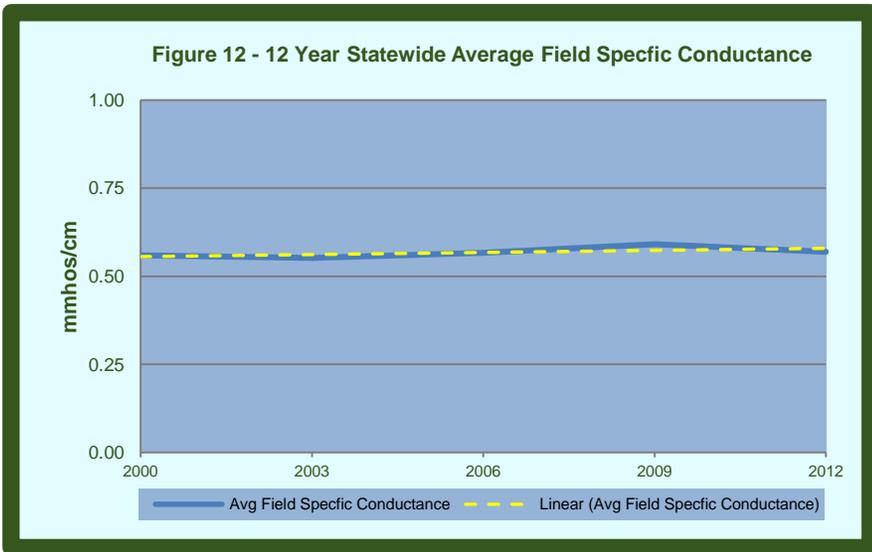
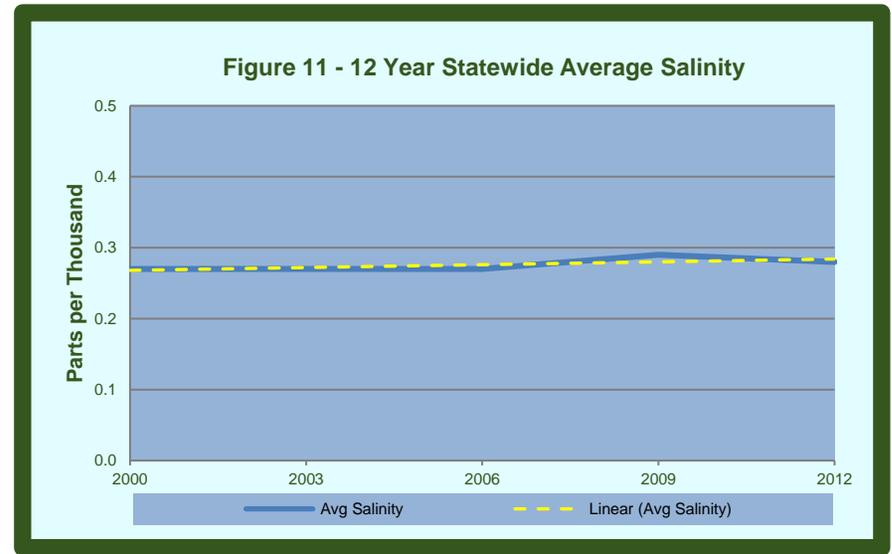
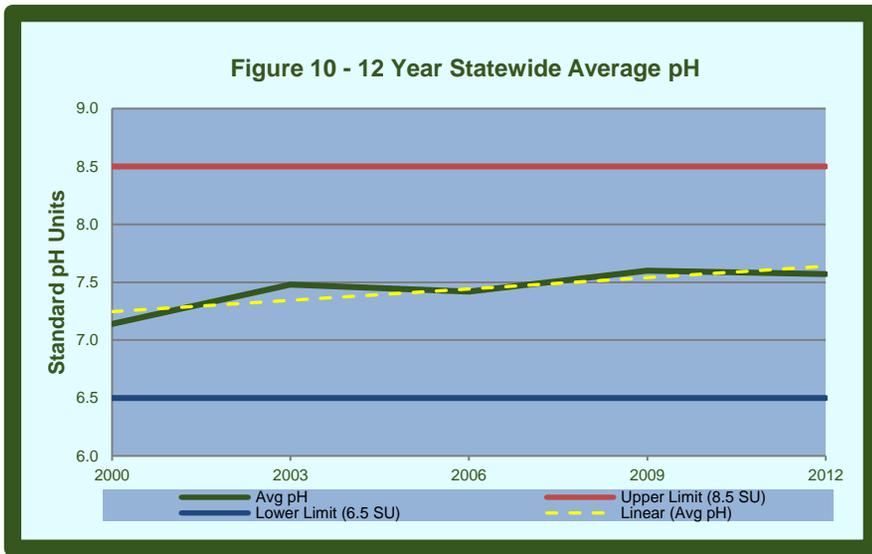


Figure 9 – Average Nitrite-Nitrate Values

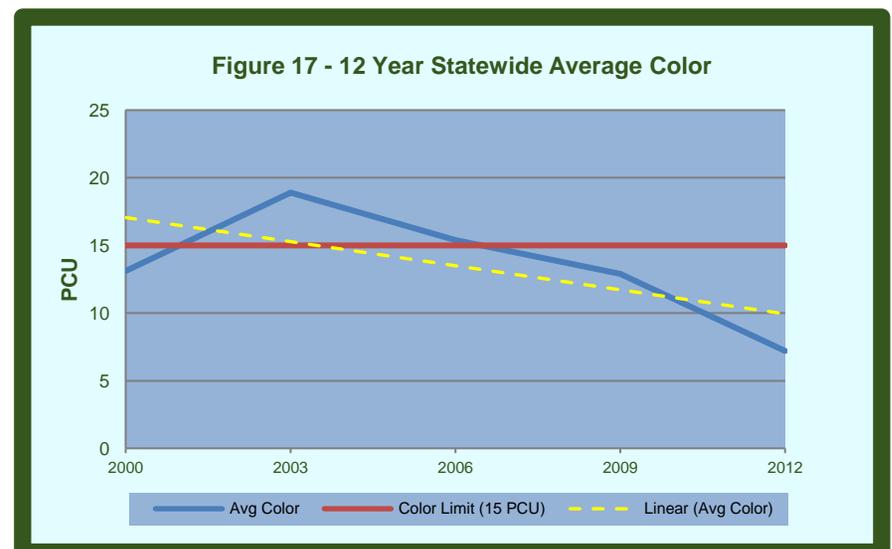
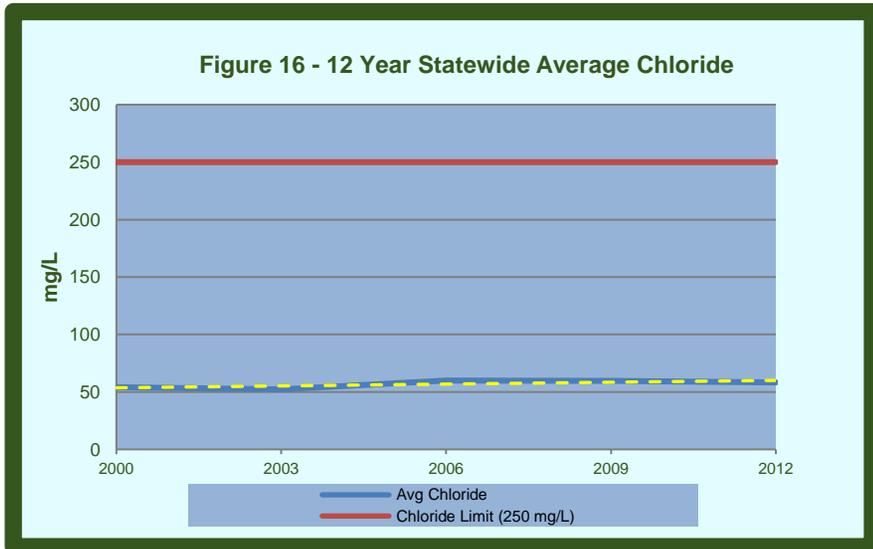
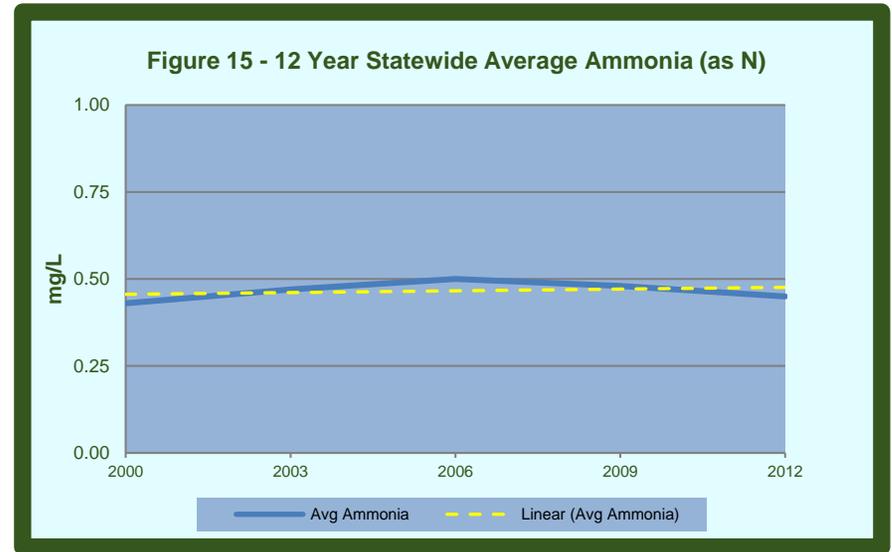
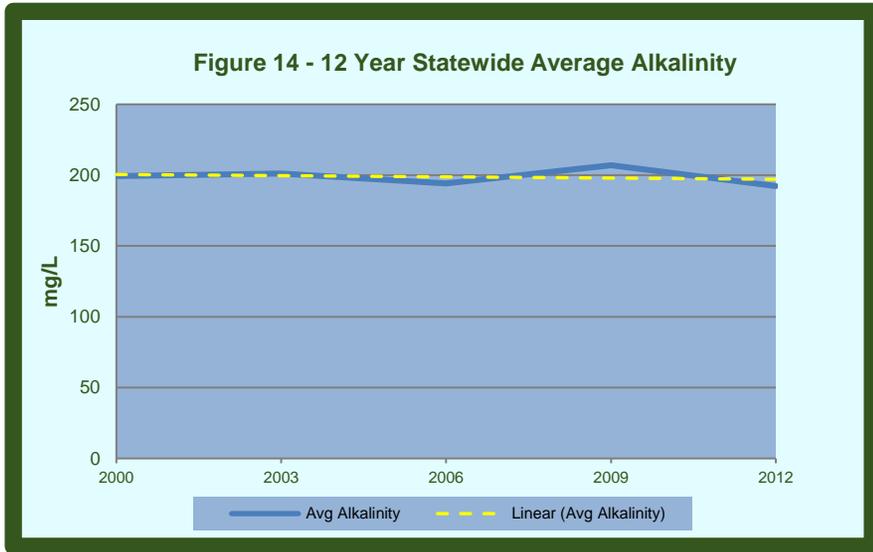


TWELVE YEAR TREND OF SELECT PARAMETER AVERAGES (2000 – 2012)

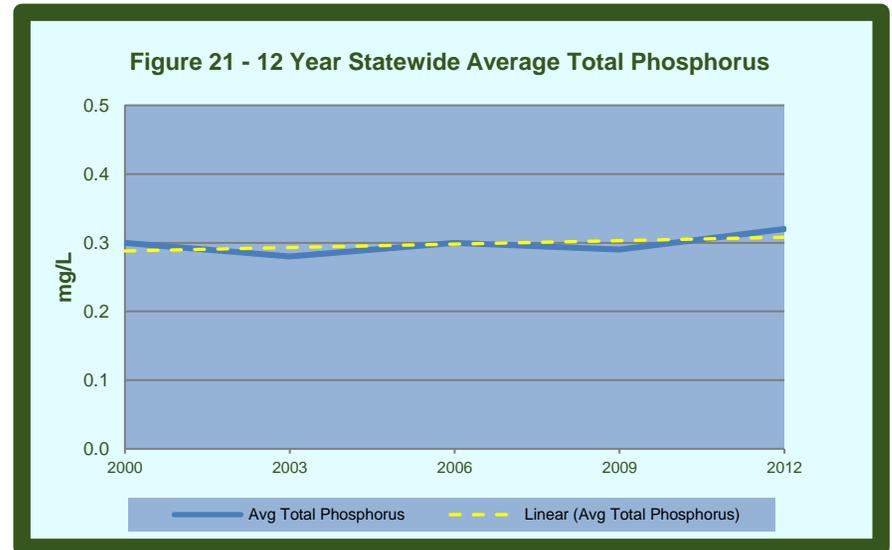
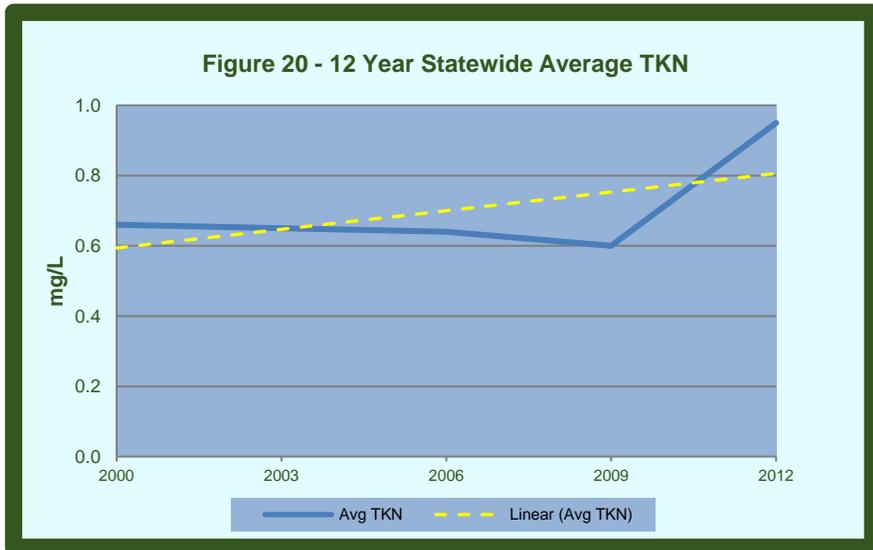
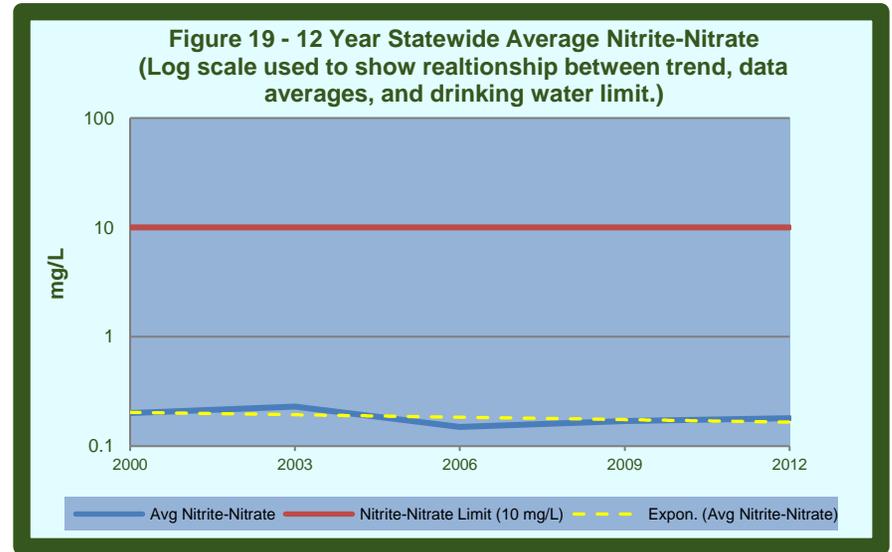
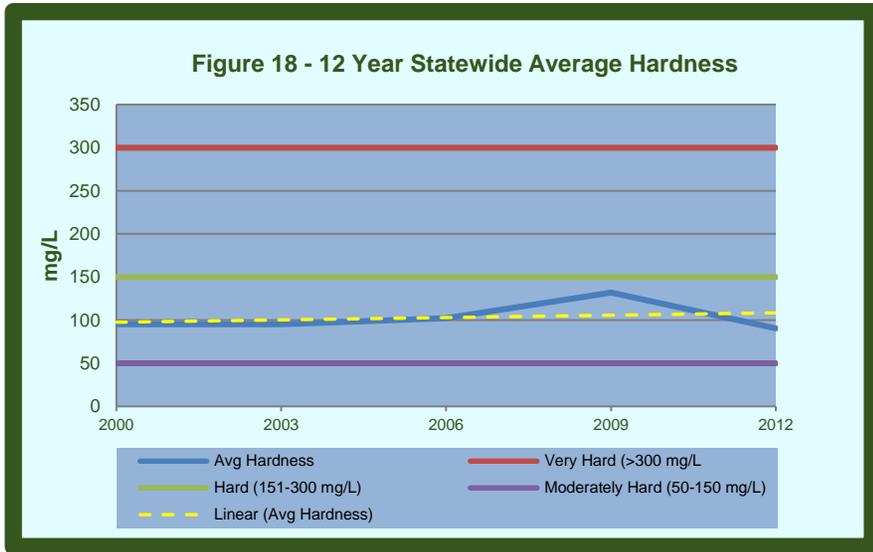
FIELD PARAMETERS



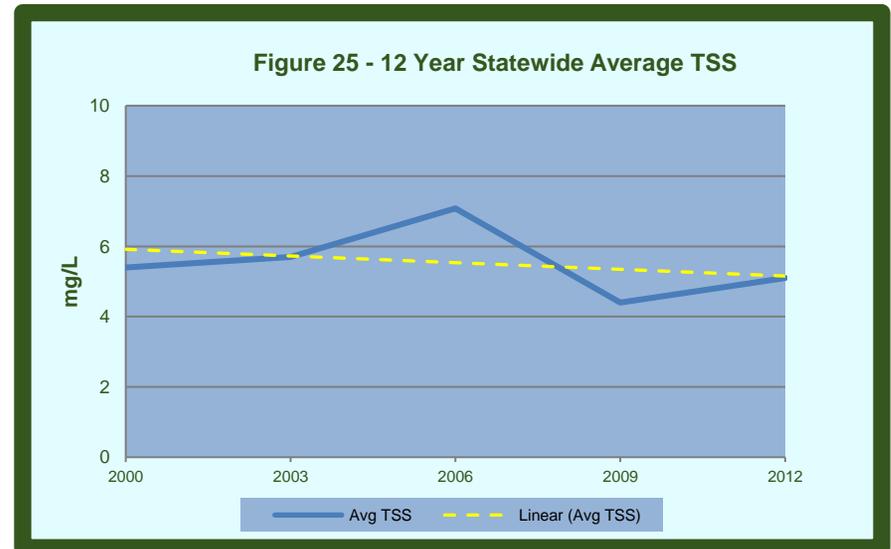
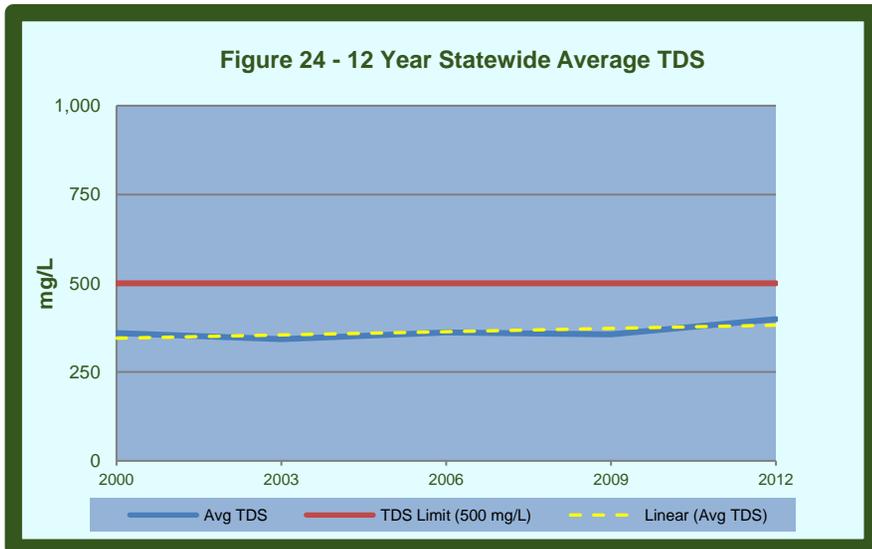
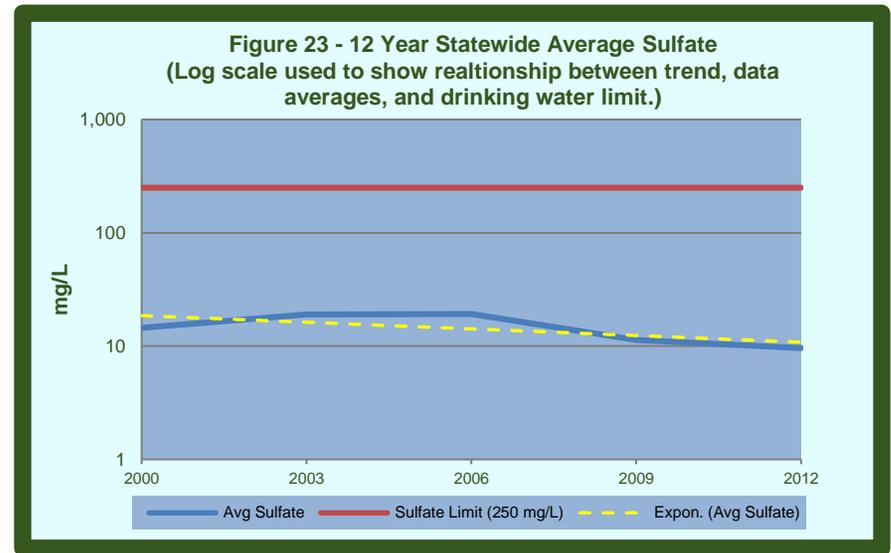
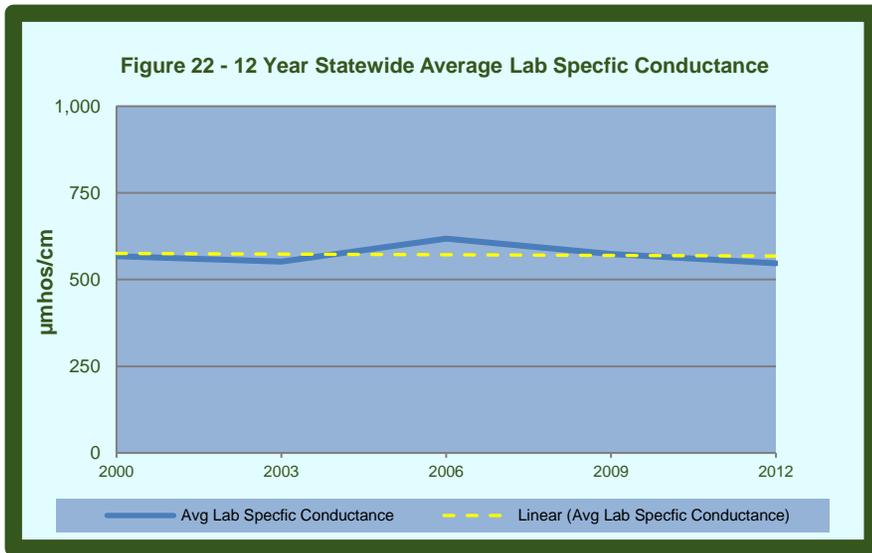
CONVENTIONAL PARAMETERS



CONVENTIONAL PARAMETERS – CONTINUED



CONVENTIONAL PARAMETERS – CONTINUED



INORGANIC (TOTAL METALS) PARAMETERS

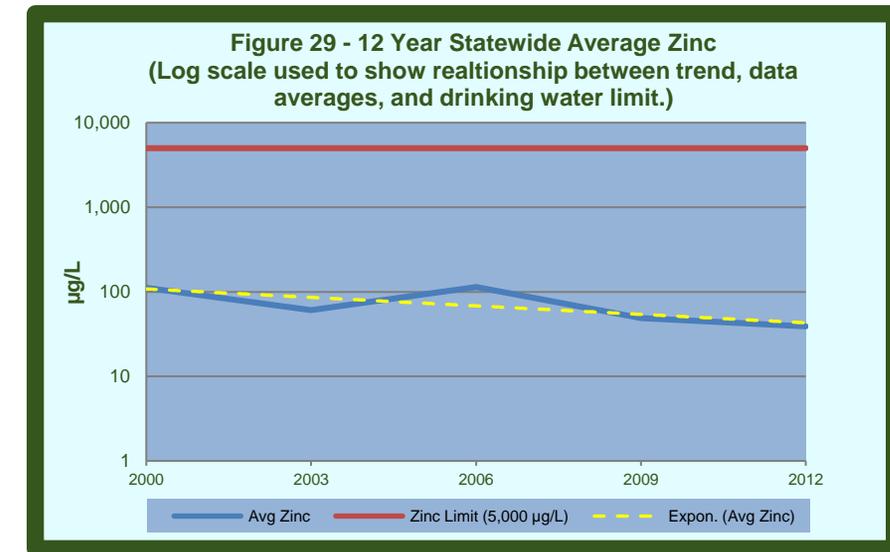
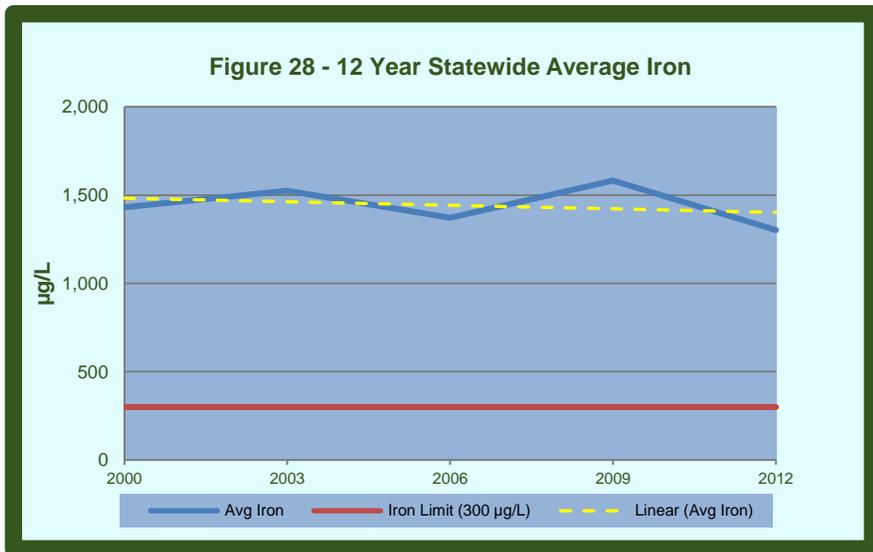
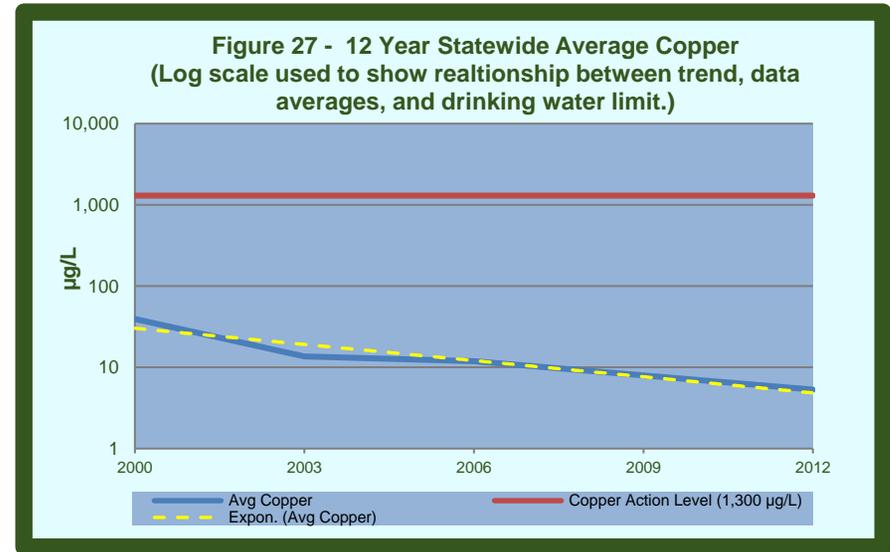
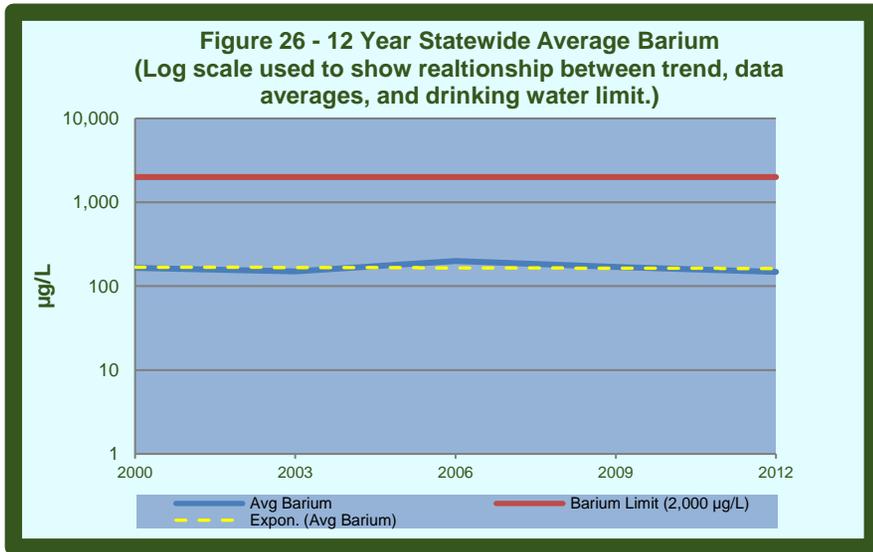


Table 8 – Parameter List

PARAMETER GROUP	LIST OF ANALYTES	REPORTING UNITS
FIELD	pH	S.U.
	Temperature	Degrees C.
	Specific Conductivity	mmhos/cm
	Total Dissolved Solids	g/L
	Salinity	ppt
WATER QUALITY	Alkalinity	mg/L
	Chloride	mg/L
	Color	PCU
	Specific Conductivity	umhos/cm
	Sulfate	mg/L
	Total Dissolved Solids	mg/L
	Total Suspended Solids	mg/L
	Turbidity	NTU
INORGANIC (TOTAL METALS)	Antimony	ug/L
	Arsenic	ug/L
	Barium	ug/L
	Beryllium	ug/L
	Cadmium	ug/L
	Chromium	ug/L
	Copper	ug/L
	Iron	ug/L
	Lead	ug/L
	Mercury	ug/L
	Nickel	ug/L
	Selenium	ug/L
	Silver	ug/L
	Thallium	ug/L
Zinc	ug/L	
NUTRIENTS	NH ₃ – as N	mg/L
	Hardness – as CaCO ₃	mg/L
	NO ₂ -NO ₃ – as N	mg/L
	TKN	mg/L
	Total Phosphorus	mg/L
VOLATILE ORGANIC COMPOUNDS	Dichlorofluoromethane	ug/L
	Chlormethane	ug/L
	Vinyl chloride	ug/L
	Bromomethane	ug/L
	Chloroethane	ug/L

PARAMETER GROUP	LIST OF ANALYTES	REPORTING UNITS
VOLATILE ORGANIC COMPOUNDS	Trichlorofluoromethane	ug/L
	1,1-Dichloroethene	ug/L
	Methylene chloride	ug/L
	trans-1,2-Dichloroethene	ug/L
	Methyl-t-butyl ether	ug/L
	1,1-Dichloroethane	ug/L
	2,2 Dichloropropane	ug/L
	cis-1,2 Dichloroethene	ug/L
	Bromochloromethane	ug/L
	Chloroform	ug/L
	1,1,1-Trichloroethane	ug/L
	1,1 Dichloropropene	ug/L
	Carbon tetrachloride	ug/L
	Benzene	ug/L
	1,2-Dichloroethane	ug/L
	Trichloroethene	ug/L
	1,2-Dichloropropane	ug/L
	Bromodichloromethane	ug/L
	Dibromomethane	ug/L
	cis-1,3-Dichloropropene	ug/L
	Toluene	ug/L
	trans-1,3-Dichloropropene	ug/L
	1,1,2-Trichloroethane	ug/L
	1,3—Dichloropropane	ug/L
	Tetrachloroethene	ug/L
	1,2-Dibromoethane	ug/L
	Dibromochloromethane	ug/L
	Chlorobenzene	ug/L
	Ethylbenzene	ug/L
	1,1,1,2-Tetrachloroethane	ug/L
	p&m Xylene	ug/L
	o-Xylene	ug/L
	Styrene	ug/L
	Bromoform	ug/L
	Isopropylbenzene	ug/L
1,1,2,2-Tetrachloromethane	ug/L	
1,2,3-Trichloropropane	ug/L	
Bromobenzene	ug/L	
n-Propylbenzene	ug/L	
2-Chlorotoluene	ug/L	
4-Chlorotoluene	ug/L	

PARAMETER GROUP	LIST OF ANALYTES	REPORTING UNITS
VOLATILE ORGANIC COMPOUNDS	1,3,5-Trimethylbenzene	ug/L
	tert-Butylbenzene	ug/L
	1,2,4-Trimethylbenzene	ug/L
	sec-Butylbenzene	ug/L
	p-Isopropyltoluene	ug/L
	1,3-Dichlorobenzene	ug/L
	1,4-Dichlorobenzene	ug/L
	n-Butylbenzene	ug/L
	1,2-Dibromo-3-chloropropane	ug/L
	Naphthalene	ug/L
	1,2,4-Trichlorobenzene	ug/L
	Hexachlorobutadiene	ug/L
	1,2-Dichlorobenzene	ug/L
	1,2,3-Trichlorobenzene	ug/L
	SEMI-VOLATILE ORGANIC COMPOUNDS	Ethyl methanesulfonate
Phenol		ug/L
Aniline		ug/L
Bis(2-chloroethyl)ether		ug/L
2-Chlorophenol		ug/L
1,3-Dichlorobenzene		ug/L
1,4-Dichlorobenzene		ug/L
Benzyl alcohol		ug/L
1,2-Dichlorobenzene		ug/L
2-Methylphenol		ug/L
Bis(2-chloroisopropyl)ether		ug/L
4-Methylphenol		ug/L
N-Nitroso-di-n-propylamine		ug/L
Hexachloroethane		ug/L
Acetophenone		ug/L
Nitrobenzene		ug/L
4-Nitrophenol		ug/L
2,4-Dinitrophenol		ug/L
Acenaphthene		ug/L
N-Nitrosopiperidine		ug/L
Isophorone		ug/L
2,4-Dimethylphenol		ug/L
2-Nitrophenol		ug/L
Benzoic acid		ug/L
Bis(2-chloroethoxy)methane		ug/L
2,4-Dichlorophenol		ug/L
a,a-Dimethylphenethylamine		ug/L

PARAMETER GROUP	LIST OF ANALYTES	REPORTING UNITS
SEMI-VOLATILE ORGANIC COMPOUNDS	1,2,4-trichlorobenzene	ug/L
	Benzidine	ug/L
	Pyrene	ug/L
	p-Dimethylaminoazobenzene	ug/L
	Butylbenzylphthalate	ug/L
	Bis(2-ethylhexyl)phthalate	ug/L
	3,3'-Dichlorobenzidine	ug/L
	Benzo(a)anthracene	ug/L
	Chrysene	ug/L
	Di-n-octylphthalate	ug/L
	7,12-Dimethylbenz(a)anthracene	ug/L
	Benzo(b)fluoranthene	ug/L
	Benzo(k)fluoranthene	ug/L
	Benzo(a)pyrene	ug/L
	3-Methylcholanthrene	ug/L
	Dibenz(a,j)acridine	ug/L
	Indeno(1,2,3-cd)pyrene	ug/L
	Dibenz(a,h)anthracene	ug/L
	Benzo(g,h,i)perylene	ug/L
	Napthalene	ug/L
	4-Chloroaniline	ug/L
	2,6-Dichlorophenol	ug/L
	Hexachlorobutadiene	ug/L
	N-Nitrose-di-n-butylamine	ug/L
	4-Chloro-3-methylphenol	ug/L
	2-Methylnapthalene	ug/L
	Hexachlorocyclopentadiene	ug/L
	1,2,4,5-Tetrachlorobenzene	ug/L
	2,4,6-Trichlorophenol	ug/L
	2,4,5-Trichlorophenol	ug/L
	2-Chloronapthalene	ug/L
	1-Chloronapthalene	ug/L
	2-Nitroaniline	ug/L
	Dimethylphthalate	ug/L
	2,6-Dinitrotoluene	ug/L
	Acenaphthylene	ug/L
	3-Nitroaniline	ug/L
	2,4-Dinitrotoluene	ug/L
	Pentachlorobenzene	ug/L
	Dibenzofuran	ug/L
1-Naphthylamine	ug/L	

PARAMETER GROUP	LIST OF ANALYTES	REPORTING UNITS
SEMI-VOLATILE ORGANIC COMPOUNDS	Diethylphthalate	ug/L
	2,3,4,6-Tetrachlorophenol	ug/L
	2-Naphthylamine	ug/L
	4-Chlorophenyl phenyl ether	ug/L
	4-Nitroaniline	ug/L
	Fluorene	ug/L
	4,6-Dinitro-2-methylphenol	ug/L
	4-Aminobiphenyl	ug/L
	1,2-Diphenylhydrazine	ug/L
	Phenacetin	ug/L
	4-Bromophenyl phenyl ether	ug/L
	Hexachlorobenzene	ug/L
	Pronamide	ug/L
	N-Nitrosodiphenylamine / Diphenylamine	ug/L
	Pentachlorophenol	ug/L
	Pentachloronitrobenzene	ug/L
	Phenathrene	ug/L
	Anthracene	ug/L
	Di-n-butylphthalate	ug/L
	Fluoranthene	ug/L
PESTICIDES	Alpha BHC	ug/L
	Beta BHC	ug/L
	Gamma BHC	ug/L
	Delta BHC	ug/L
	Heptachlor	ug/L
	Aldrin	ug/L
	Heptachlor epoxide	ug/L
	Chlordane	ug/L
	Endosulfan I	ug/L
	4,4'-DDE	ug/L
	Dieldrin	ug/L
	4,4'DDD	ug/L
	Endrin	ug/L
	Toxaphene	ug/L
	Endosulfan II	ug/L
	Endrin Aldehyde	ug/L
	4,4'DDT	ug/L
	Endosulfan Sulfate	ug/L
	Methoxychlor	ug/L
	Endrin Ketone	ug/L
	PCB 1221/ PCB 1232	ug/L

PARAMETER GROUP	LIST OF ANALYTES	REPORTING UNITS
PCBs	PCB 1016/ PCB 1242	ug/L
PCBs	PCB 1254	ug/L
	PCB 1248	ug/L
	PCB 1260	ug/L

Table 9 – Wells Sampled

WELL NUMBER	OWNER	DEPTH (FEET)	WELL USE	AQUIFER/SYSTEM
BI-192	LUCKY WATER SYSTEM	153	Public Supply	Sparta Aquifer
BI-212	STONE CONTAINER CORP.	490	Industrial	Sparta Aquifer
CA-105	VIXEN WATER SYSTEM	525	Public Supply	Sparta Aquifer
CL-203	TOWN OF HOMER	460	Public Supply	Sparta Aquifer
L-31	CITY OF RUSTON	636	Public Supply	Sparta Aquifer
L-32	CITY OF RUSTON	652	Public Supply	Sparta Aquifer
MO-253	VILLAGE OF COLLINSTON	773	Public Supply	Sparta Aquifer
OU-506	ANGUS CHEMICAL	506	Industrial	Sparta Aquifer
OU-597	GRAPHIC PACKAGING INT'L INC.	710	Industrial	Sparta Aquifer
SA-534	BOISE CASCADE	543	Public Supply	Sparta Aquifer
UN-205	D'ARBONNE WATER SYSTEM	725	Public Supply	Sparta Aquifer
W-165	TOWN OF WINNFIELD	456	Public Supply	Sparta Aquifer
WB-241	TOWN OF SPRINGHILL	408	Public Supply	Sparta Aquifer
WB-269	CITY OF MINDEN	280	Public Supply	Sparta Aquifer
BI-236	ALBERTA WATER SYSTEM	410	Public Supply	Carrizo-Wilcox Aquifer
BO-274	VILLAGE WATER SYSTEM	395	Public Supply	Carrizo-Wilcox Aquifer
BO-7274Z	PRIVATE OWNER	290	Domestic	Carrizo-Wilcox Aquifer
CD-453	CITY OF VIVIAN	228	Public Supply	Carrizo-Wilcox Aquifer
CD-630	PRIVATE OWNER	240	Irrigation	Carrizo-Wilcox Aquifer
CD-639	SI PRECAST	200	Industrial	Carrizo-Wilcox Aquifer
CD-642	LOUISIANA LIFT	210	Industrial	Carrizo-Wilcox Aquifer
DS-384	CITY OF MANSFIELD	293	Public Supply	Carrizo-Wilcox Aquifer
DS-5297Z	PRIVATE OWNER	170	Domestic	Carrizo-Wilcox Aquifer
DS-5996Z	PRIVATE OWNER	360	Domestic	Carrizo-Wilcox Aquifer
RR-5070Z	PRIVATE OWNER	105	Domestic	Carrizo-Wilcox Aquifer
SA-522	PRIVATE OWNER	200	Irrigation	Carrizo-Wilcox Aquifer
CD-431	CERTAINTEED	62	Industrial	Red River Alluvial Aquifer
CD-859	PRIVATE OWNER	58	Irrigation	Red River Alluvial Aquifer

WELL NUMBER	OWNER	DEPTH (FEET)	WELL USE	AQUIFER/SYSTEM
NA-5404Z	PRIVATE OWNER	80	Irrigation	Red River Alluvial Aquifer
NA-SWANSON	PRIVATE OWNER	80	Irrigation	Red River Alluvial Aquifer
RR-345	PRIVATE OWNER	89	Irrigation	Red River Alluvial Aquifer
AL-120	CITY OF OAKDALE	910	Public Supply	Evangeline Aquifer
AL-363	WEST ALLEN PARISH WATER DIST.	1,715	Public Supply	Evangeline Aquifer
AL-373	TOWN OF OBERLIN	747	Public Supply	Evangeline Aquifer
AL-391	FAIRVIEW WATER SYSTEM	800	Public Supply	Evangeline Aquifer
AV-441	TOWN OF EVERGREEN	319	Public Supply	Evangeline Aquifer
BE-410	BOISE CASCADE	474	Industrial	Evangeline Aquifer
BE-512	SINGER WATER DISTRICT	918	Public Supply	Evangeline Aquifer
CU-1362	LA WATER CO	635	Public Supply	Evangeline Aquifer
EV-858	SAVOY SWORDS WATER SYSTEM	472	Public Supply	Evangeline Aquifer
R-1350	PRIVATE OWNER	180	Irrigation	Evangeline Aquifer
V-5065Z	PRIVATE OWNER	170	Domestic	Evangeline Aquifer
V-668	LDWF/FORT POLK WMA HQ	280	Other	Evangeline Aquifer
CT-118	CITY OF JONESVILLE	762	Public Supply	Catahoula Aquifer
LS-278	ROGERS WATER SYSTEM	352	Public Supply	Catahoula Aquifer
R-1113	POLLOCK AREA WATER SYSTEM	852	Public Supply	Catahoula Aquifer
R-1311	LENA WATER SYSTEM, INC.	514	Public Supply	Catahoula Aquifer
V-434	TOWN OF ANACOCO	910	Public Supply	Catahoula Aquifer
BI-208	PRIVATE OWNER	100	Domestic	North Louisiana Terrace Aquifer
BO-434	RED CHUTE UTILITIES	94	Public Supply	North Louisiana Terrace Aquifer
BO-578	VILLAGE WATER SYSTEM	85	Public Supply	North Louisiana Terrace Aquifer
BO-7896Z	PRIVATE OWNER	96	Domestic	North Louisiana Terrace Aquifer
G-342	VANGAURD SYNFUELS, LLC	49	Industrial	North Louisiana Terrace Aquifer
G-432	CENTRAL GRANT WATER SYSTEM	158	Public Supply	North Louisiana Terrace Aquifer
LS-264	CITY OF JENA	105	Public Supply	North Louisiana Terrace Aquifer
MO-124	TEXAS GAS	133	Public Supply	North Louisiana Terrace Aquifer
MO-364	PEOPLES WATER SERVICE	154	Public Supply	North Louisiana Terrace Aquifer
OU-5524Z	PRIVATE OWNER	95	Domestic	North Louisiana Terrace Aquifer
RR-254	EAST CROSS WATER SYSTEM	93	Public Supply	North Louisiana Terrace Aquifer
BE-405	BOISE CASCADE	1,016	Industrial	Carnahan Bayou Aquifer
CO-47	CITY OF VIDALIA	310	Public Supply	Carnahan Bayou Aquifer
G-5178Z	PRIVATE OWNER	165	Domestic	Carnahan Bayou Aquifer
R-1001	GARDENER WATER SYSTEM	1,080	Public Supply	Carnahan Bayou Aquifer
R-1172	CLECO-RODEMACHER	298	Power Generation	Carnahan Bayou Aquifer
R-1210	CITY OF ALEXANDRIA	2,036	Public Supply	Carnahan Bayou Aquifer
V-496	U.S. ARMY/FORT POLK	1,415	Public Supply	Carnahan Bayou Aquifer
V-566	ALCO-HUTTON VFD	143	Public Supply	Carnahan Bayou Aquifer

WELL NUMBER	OWNER	DEPTH (FEET)	WELL USE	AQUIFER/SYSTEM
V-656	EAST CENTRAL VERNON WATER SYS.	1,477	Public Supply	Carnahan Bayou Aquifer
V-8102Z	PRIVATE OWNER	66	Domestic	Carnahan Bayou Aquifer
AV-126	PRIVATE OWNER	155	Domestic	Mississippi River Alluvial Aquifer
AV-462	PRIVATE OWNER	110	Irrigation	Mississippi River Alluvial Aquifer
AV-5135Z	PRIVATE OWNER	110	Domestic	Mississippi River Alluvial Aquifer
CO-YAKEY	PRIVATE OWNER	150	Domestic	Mississippi River Alluvial Aquifer
CT-489	PRIVATE OWNER	144	Irrigation	Mississippi River Alluvial Aquifer
CT-DENNIS	PRIVATE OWNER	30	Domestic	Mississippi River Alluvial Aquifer
EB-885	PRIVATE OWNER	352	Irrigation	Mississippi River Alluvial Aquifer
EC-370	PRIVATE OWNER	119	Irrigation	Mississippi River Alluvial Aquifer
FR-1358	PRIVATE OWNER	60	Domestic	Mississippi River Alluvial Aquifer
IB-363	SYNGENTA CROP PROTECTION, INC.	225	Industrial	Mississippi River Alluvial Aquifer
IB-5427Z	PRIVATE OWNER	160	Domestic	Mississippi River Alluvial Aquifer
IB-COM	PRIVATE OWNER	185	Domestic	Mississippi River Alluvial Aquifer
MA-206	TALLULAH WATER SERVICE	130	Public Supply	Mississippi River Alluvial Aquifer
MO-871	PRIVATE OWNER	80	Irrigation	Mississippi River Alluvial Aquifer
PC-5515Z	PRIVATE OWNER	156	Domestic	Mississippi River Alluvial Aquifer
RI-469	LIDDIEVILLE WATER SYSTEM	90	Public Supply	Mississippi River Alluvial Aquifer
RI-48	RAYVILLE WATER DEPARTMENT	115	Public Supply	Mississippi River Alluvial Aquifer
RI-730	START WATER SYSTEM	101	Public Supply	Mississippi River Alluvial Aquifer
SL-5477Z	PRIVATE OWNER	110	Domestic	Mississippi River Alluvial Aquifer
SMN-33	LDOTD/LAFAYTTE DISTRICT	125	Public Supply	Mississippi River Alluvial Aquifer
TS-61	TOWN OF ST. JOSEPH	140	Public Supply	Mississippi River Alluvial Aquifer
TS-FORTENB	PRIVATE OWNER	Unknown	Domestic	Mississippi River Alluvial Aquifer
WC-527	PRIVATE OWNER	85	Irrigation	Mississippi River Alluvial Aquifer
WC-91	NEW CARROLL WTR. ASSN.	115	Public Supply	Mississippi River Alluvial Aquifer
CA-35	CITY OF COLUMBIA	298	Public Supply	Cockfield Aquifer
EC-233	TOWN OF LAKE PROVIDENCE	371	Public Supply	Cockfield Aquifer
G-441	RED HILL WATER SYSTEM	212	Public Supply	Cockfield Aquifer
MO-479	BAYOU BONNE IDEE WATER SYS.	258	Public Supply	Cockfield Aquifer
NA-5449Z	PRIVATE OWNER	170	Domestic	Cockfield Aquifer
OU-FRITH	PRIVATE OWNER	80	Domestic	Cockfield Aquifer
RI-127	DELHI WATER WORKS	416	Public Supply	Cockfield Aquifer
RI-450	RIVER ROAD WATERWORKS	283	Public Supply	Cockfield Aquifer
SA-BYRD	PRIVATE OWNER	150	Domestic	Cockfield Aquifer
UN-167	PRIVATE OWNER	110	Irrigation	Cockfield Aquifer
W-198	ATLANTA WATER SYSTEM	445	Public Supply	Cockfield Aquifer
W-5239Z	PRIVATE OWNER	145	Domestic	Cockfield Aquifer
WC-187	NEW CARROLL WTR. ASSN.	110	Public Supply	Cockfield Aquifer

WELL NUMBER	OWNER	DEPTH (FEET)	WELL USE	AQUIFER/SYSTEM
WC-487	TOWN OF OAK GROVE	396	Public Supply	Cockfield Aquifer
AC-539	CITY OF RAYNE	251	Public Supply	Chicot Aquifer
AC-8316Z	PRIVATE OWNER	165	Domestic	Chicot Aquifer
BE-378	TRANSCONTINENTAL GAS PIPELINE	172	Industrial	Chicot Aquifer
BE-412	BOISE CASCADE	202	Industrial	Chicot Aquifer
BE-488	SINGER WATER DISTRICT	262	Public Supply	Chicot Aquifer
CN-92	USGS	443	Observation	Chicot Aquifer
CU-10192Z	PPG INDUSTRIES	230	Recovery	Chicot Aquifer
CU-1125	LDOTD	570	Public Supply	Chicot Aquifer
CU-1366	CITY OF LAKE CHARLES	685	Public Supply	Chicot Aquifer
CU-1471	PPG INDUSTRIES	525	Industrial	Chicot Aquifer
CU-770	USGS	490	Observation	Chicot Aquifer
CU-862	CITGO PETROLEUM CORPORATION	560	Industrial	Chicot Aquifer
EV-673	CITY OF MAMOU	247	Public Supply	Chicot Aquifer
I-7312Z	BREAUX ELECTRIC	180	Public Supply	Chicot Aquifer
JD-862	CITY OF WELSH	697	Public Supply	Chicot Aquifer
LF-572	CITY OF LAFAYETTE	570	Public Supply	Chicot Aquifer
R-6947Z	HOLLOWAY NURSERY	110	Domestic	Chicot Aquifer
SL-392	USGS	126	Observation	Chicot Aquifer
SMN-109	USGS	375	Observation	Chicot Aquifer
V-535	MARLOW FIRE STATION	66	Public Supply	Chicot Aquifer
VE-151	PRIVATE OWNER	250	Irrigation	Chicot Aquifer
VE-862	TOWN OF GUEYDAN	249	Public Supply	Chicot Aquifer
VE-882	CITY OF KAPLAN	279	Public Supply	Chicot Aquifer
BE-407	BOISE CASCADE	1,657	Industrial	Williamson Creek Aquifer
CO-163	U. S. ARMY CORPS OF ENG.	513	Public Supply	Williamson Creek Aquifer
R-932	CITY OF ALEXANDRIA	466	Public Supply	Williamson Creek Aquifer
R-1362	INTERNATIONAL PAPER CO.	402	Industrial	Williamson Creek Aquifer
V-420	U.S. ARMY/FORT POLK	920	Public Supply	Williamson Creek Aquifer
V-5858Z	PRIVATE OWNER	248	Domestic	Williamson Creek Aquifer
V-8681Z	PRIVATE OWNER	190	Domestic	Williamson Creek Aquifer
AN-266	CITY OF GONZALES	548	Public Supply	Chicot Equivalent Aquifer System
AN-321	RUBICON, INC.	523	Industrial	Chicot Equivalent Aquifer System
AN-316	WESTLAKE VINYL	478	Industrial	Chicot Equivalent Aquifer System
AN-337	BASF CORP.	459	Public Supply	Chicot Equivalent Aquifer System
AN-500	UNIROYAL CHEMICAL CO.	480	Industrial	Chicot Equivalent Aquifer System
AN-6297Z	OXY CHEMICAL	294	Monitor	Chicot Equivalent Aquifer System
AN-9183Z	PRIVATE OWNER	630	Domestic	Chicot Equivalent Aquifer System
EB-1231	GEORGIA PACIFIC CORP.	280	Industrial	Chicot Equivalent Aquifer System

WELL NUMBER	OWNER	DEPTH (FEET)	WELL USE	AQUIFER/SYSTEM
EB-34	EXXONMOBIL USA	453	Industrial	Chicot Equivalent Aquifer System
EB-8599Z	PRIVATE OWNER	180	Domestic	Chicot Equivalent Aquifer System
EB-991B	BATON ROUGE WATER WORKS	565	Public Supply	Chicot Equivalent Aquifer System
EF-5329Z	PRIVATE OWNER	97	Domestic	Chicot Equivalent Aquifer System
JF-224	ENTERGY	775	Industrial	Chicot Equivalent Aquifer System
LI-5477Z	PRIVATE OWNER	106	Domestic	Chicot Equivalent Aquifer System
LI-85	FRENCH SETTLEMENT WATER SYS	405	Public Supply	Chicot Equivalent Aquifer System
SC-179	UNION CARBIDE	460	Industrial	Chicot Equivalent Aquifer System
SH-5333Z	PRIVATE OWNER	230	Domestic	Chicot Equivalent Aquifer System
SH-77	TRANSCO	170	Public Supply	Chicot Equivalent Aquifer System
SJ-226	GRAMERCY ALUMINA, LLC	248	Industrial	Chicot Equivalent Aquifer System
SJB-173	E.I. DUPONT	425	Industrial	Chicot Equivalent Aquifer System
ST-11516Z	PRIVATE OWNER	340	Domestic	Chicot Equivalent Aquifer System
ST-5245Z	PRIVATE OWNER	90	Domestic	Chicot Equivalent Aquifer System
TA-520	PRIVATE OWNER	135	Irrigation	Chicot Equivalent Aquifer System
WA-5295Z	PRIVATE OWNER	100	Domestic	Chicot Equivalent Aquifer System
WA-5311Z	PRIVATE OWNER	90	Domestic	Chicot Equivalent Aquifer System
AV-680	AVOYELLES WATER COMMISSION	553	Public Supply	Evangeline Equivalent Aquifer System
EB-1003	BATON ROUGE WATER WORKS	1,430	Public Supply	Evangeline Equivalent Aquifer System
EF-MILEY	PRIVATE OWNER	185	Domestic	Evangeline Equivalent Aquifer System
LI-299	WARD 2 WATER DISTRICT	1,417	Public Supply	Evangeline Equivalent Aquifer System
PC-325	ALMA PLANTATION LTD	1,252	Industrial	Evangeline Equivalent Aquifer System
SL-679	VALERO ENERGY CORPORATION	1,152	Industrial	Evangeline Equivalent Aquifer System
ST-532	SE LOUISIANA STATE HOSPITAL	1,520	Public Supply	Evangeline Equivalent Aquifer System
ST-6711Z	PRIVATE OWNER	860	Domestic	Evangeline Equivalent Aquifer System
ST-820	SOUTHERN MHP	2,004	Public Supply	Evangeline Equivalent Aquifer System
TA-284	CITY OF PONCHATOULA	608	Public Supply	Evangeline Equivalent Aquifer System
TA-286	TOWN OF KENTWOOD	640	Public Supply	Evangeline Equivalent Aquifer System
TA-6677Z	PRIVATE OWNER	495	Domestic	Evangeline Equivalent Aquifer System
WA-241	PRIVATE OWNER	400	Irrigation	Evangeline Equivalent Aquifer System
WA-5210Z	PRIVATE OWNER	752	Domestic	Evangeline Equivalent Aquifer System
WBR-181	PORT OF GREATER BATON ROUGE	1,900	Industrial	Evangeline Equivalent Aquifer System
WF-DELEE	PRIVATE OWNER	240	Domestic	Evangeline Equivalent Aquifer System
EB-630	BATON ROUGE WATER COMPANY	2,253	Public Supply	Jasper Equivalent Aquifer System
EB-770	CITY OF ZACHARY	2,080	Public Supply	Jasper Equivalent Aquifer System
EF-272	LA. WAR VETS HOME	1,325	Public Supply	Jasper Equivalent Aquifer System
LI-185	CITY OF DENHAM SPRINGS	2,610	Public Supply	Jasper Equivalent Aquifer System
LI-229	WARD 2 WATER DISTRICT	1,826	Public Supply	Jasper Equivalent Aquifer System
LI-257	VILLAGE OF ALBANY	1,842	Public Supply	Jasper Equivalent Aquifer System

WELL NUMBER	OWNER	DEPTH (FEET)	WELL USE	AQUIFER/SYSTEM
PC-275	PRIVATE OWNER	1,912	Domestic	Jasper Equivalent Aquifer System
SH-104	CAL MAINE FOODS	1,652	Industrial	Jasper Equivalent Aquifer System
ST-995	PRIVATE OWNER	2,290	Irrigation	Jasper Equivalent Aquifer System
ST-1135	LAKESHORE ESTATES	2,605	Public Supply	Jasper Equivalent Aquifer System
ST-FOLSOM	VILLAGE OF FOLSOM	2,265	Public Supply	Jasper Equivalent Aquifer System
TA-560	TOWN OF ROSELAND	2,032	Public Supply	Jasper Equivalent Aquifer System
TA-826	CITY OF PONCHATOULA	2,015	Public Supply	Jasper Equivalent Aquifer System
WA-248	TOWN OF FRANKLINTON	2,700	Public Supply	Jasper Equivalent Aquifer System
WF-264	W. FELICIANA PARISH UTILITIES	960	Public Supply	Jasper Equivalent Aquifer System

REFERENCES

Hydrogeologic column of aquifers

DOTD/USGS *Water Resources Special Report No. 9, 1995.*

Hardness scale

Peavy, H.S. et al. *Environmental Engineering, 1985.*

Geology and hydrogeology sections

Boniol, D. et al. *Recharge Potential of Louisiana Aquifers, A Supplement to the State Aquifer Recharge Map and Atlas Plates, 1989.* Louisiana Geological Survey.

Boydston, J. et al. *State of Louisiana Water Quality Management Plan, Water Quality Inventory Section 305 (b), 1996.* Louisiana Department of Environmental Quality.

Smoot, C.W. *Louisiana Hydrologic Atlas Map No. 2: Areal Extent of Freshwater In Major Aquifers of Louisiana, 1986.* United States Geological Survey.

Smoot, C.W. *Louisiana Hydrologic Atlas Map No. 4: Geohydrologic Sections of Louisiana, 1989.* United States Geological Survey.

Buono, A. *The Southern Hills Regional Aquifer System of Southeastern Louisiana and Southwestern Mississippi, 1983.* United States Geological Survey.